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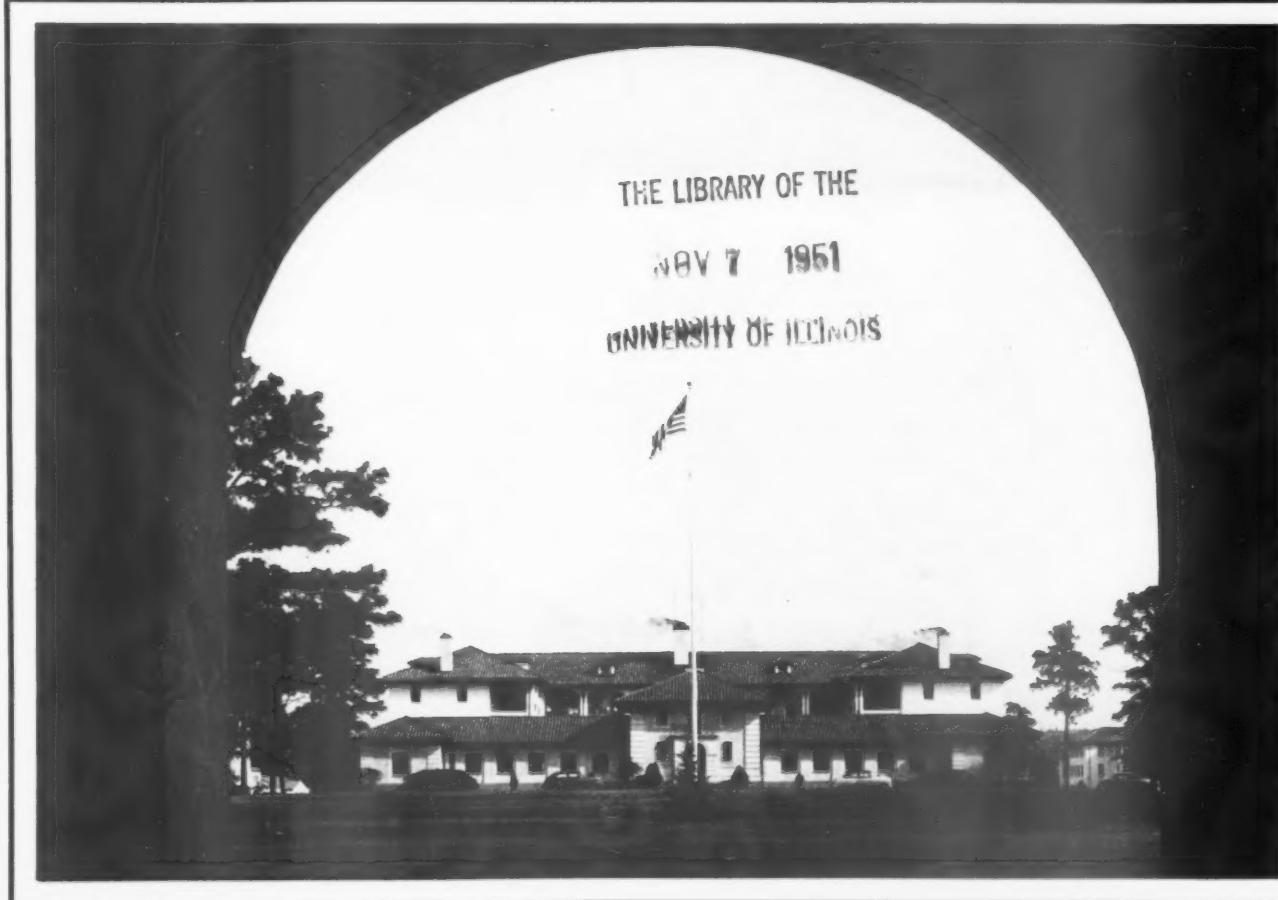


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COVER PHOTO

Post Headquarters, Fort McClellan, Alabama, where the new Army Chemical Training Center is now located. See story on page 14.

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DIRECTORS VOTE

NEXT ANNUAL MEETING IN CHICAGO

The Board of Directors of the Armed Forces Chemical Association held its annual mid-year meeting on September 6, 1951, at the Hotel New Yorker, in New York City, with President Walter E. Lawson presiding. The meeting was well attended. President Lawson presented a report from the Secretary-Treasurer, Fred M. Jacobs, who was unable to attend, which indicated that the financial situation of the Association continues to be satisfactory.

Dr. Lawson reported the participation by the Armed Forces Chemical Association in the commemoration of the 75th anniversary of the American Chemical Society by their presentation of an engrossed scroll.

Gift By Officers of First Chemical Regiment

Colonel Herb Baer has notified the Association, Dr. Lawson advised the Directors, that arrangements have been made to present to the AFCA the proceeds of a \$500 bond, the property of a group of officers of the First Chemical Regiment. The gift has been accepted and will be suitably and gratefully acknowledged.

Civil Defense

The setting up of a new Engineering Service agency of the Federal Civil Defense organization headed by Perry Ford, and the designation of Dr. Lawson to serve on an advisory committee of this agency was reported. There was a general discussion of civil defense. The experiences of a number of Chapters were related. Various Chapters have proffered their services to local civil defense authorities, but while these offered have been generally received with appreciation in no case have they been actually utilized.

Dr. Lawson expressed the hope that the Civil Defense picture would change for the better, and expressed his belief that the new Engineering Services agency under Mr. Ford offered evidence of an encouraging trend.

Public Education

There was an extensive discussion of the need for a better public understanding of gas warfare and its implications. It was the consensus of opinion of the group that the AFCA, all representatives thereof acting as individuals, should do what they could in the education of the civilians of this country in the value of gas warfare.

Little good is to be accomplished by mutual discussion of this vital subject by our membership, inasmuch as there is already a widespread agreement among them that gas warfare is neither more nor less inhumane than any other effective form of warfare and that its use or disuse should be a matter for decision by military authorities, unhampered by a public sentiment based on insufficient facts. Editorials and letters published in the JOURNAL do little good, therefore, unless they are reprinted by the press and make an impression upon the general public. Educational activities carried on at the level of the Chapters of the Association, however, may be expected to prove effective in securing a better informed public understanding of the subject.

There was little tendency, in the discussion at this meeting, toward a specific advocacy of the use of gas warfare.



Officers of the New York Chapter of the Armed Forces Chemical Association meeting with General Bullene in the New York Procurement District. Left to right (front row): President Edwin C. Kenton, Major General E. F. Bullene, Major General William N. Porter (retired). Standing, left to right: Vice President S. Willard Jacobs, Niagara Alkali Company, Lt. Col. Frank R. Johnson, Major Harold F. Zimmerman, Dr. Eugene M. MacAuliff and Captain John H. Eller, Executive Officer, New York Chemical Procurement District.

The problem, it was agreed, was to bring about a more realistic attitude by the layman. Any problem, it was felt, could be more effectively attacked by our membership acting as individuals. Great numbers of our members, it was suggested, belong to discussion groups, luncheon clubs, and other bodies which might be interested in an examination of this lively subject. The facts, properly presented before such groups, could be an exceedingly effective means of improving public understanding of gas warfare.

The Annual Meeting

The selection of the place where the next Annual Meeting would be held was then brought up for discussion. Invitations had been received from the Chicago, Dallas, and New York Chapters. It had also been suggested that a Meeting be held, partly in Baltimore and partly in the Army Chemical Center.

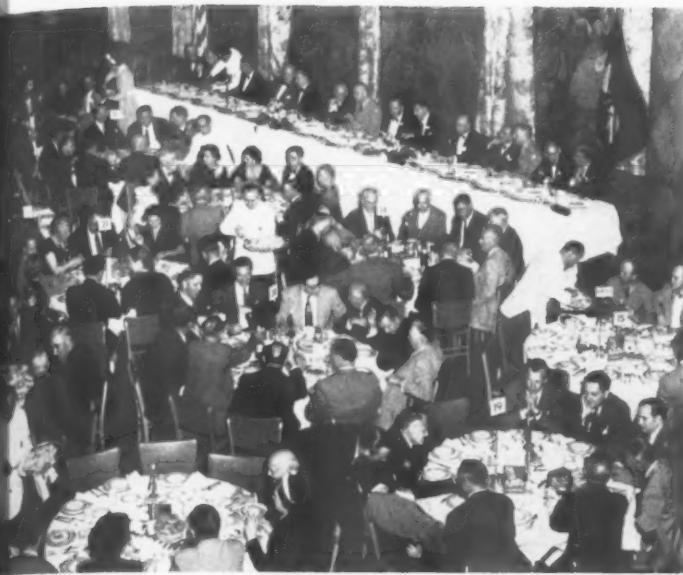
The conclusion was reached that a successful and well-attended Annual Meeting might be held in any of these places. Because all of AFCA's meetings have heretofore been held along the East Coast it was finally decided that the next Meeting should go to Chicago.

Mr. Lou Terry, who had eloquently presented Chicago's invitation, pledged that Chicago, as the Host Chapter, would stage an Annual Meeting which would excel in attendance, and in interest.

(The decision of the Board of Directors was implemented by the Executive Committee at its meeting on September 18th. The Meeting will be held in May, with the exact date not yet established.)

General Bullene

During the meeting General Bullene addressed the Directors in an off the record discussion of current problems of the Chemical Corps. It was followed by a general discussion of matters touched upon in his talk.



Panoramic view of the Grand Ballroom, Hotel New Yorker, as the Armed Forces Chemical Association held its banquet on Thursday, September 6, 1951.

NEW YORK CHAPTER PLAYS HOST TO GENERAL BULLENE AND AFCA EXECS.

By John Carroll

On Thursday evening, 6 September, the grand ballroom of the Hotel New Yorker in New York City, was filled to capacity on the occasion of an Armed Forces Chemical Association banquet sponsored by the New York Chapter. The dinner marked the first visit of Major General E. F. Bullene to the New York Chapter and it coincided with the 75th Anniversary of the American Chemical Society.

The dinner was preceded by an informal cocktail hour when scientists, industrialists and Reservists reviewed old acquaintances. Although no name tags were issued, very little difficulty was encountered recognizing well known figures in the Chemical Corps activities. Dr. Lawson, Generals Porter and Montgomery, Howard McQuaid, Colonel Sam Cummings, Colonel Frank Johnson, Charlie Pledger, General Loucks were but a few of the four hundred whom everyone recognized immediately.

More than fifty Chemical Corps Reservists were on hand, in response to Captain Jack Eller's letter, to greet General Bullene. Some of them who had not seen the General since their days at Camp Sibert or San Jose were quick to remark how readily he recognized them in civilian clothes and behind a few extra pounds.

During his introductory remarks at the banquet, Dr. Lawson assured the audience that if the vote of the Executive Council determining the site of the Annual Meeting were based on the dinner arranged by Mr. Edwin C. Kenton, President of the New York Chapter, it would have to be New York. Other factors, however, placed the meeting in Chicago.

The first speaker on the program was Sir Ian Heilborn, D.S.O., F.R.S., whose distinguished career includes service as Scientific Advisor to the Director of Scientific Research in the Ministry of Supply from 1939 to 1942, and as Scientific Advisor to the Ministry of Production from 1942 to 1945. Sir Ian, who spoke briefly, said, in part, "... this great gathering tonight is in the way of an eye-opener to us from that little island across the ocean. We are proud, I think, of the close association of research chemists, industrial chemists, and the armed forces. We get on well together, but we have not yet reached the proud position which you have of having an Armed Forces Chemical Association as such, where not only do you meet during the day to discuss the many urgent problems of the moment, and of the future, but having disposed of those, you meet, as I see you this evening, to enjoy the comradeship of people working, as

your chairman has said, for the good of the country."

Sir Robert Robertson, F.R.S., F.R.I.C., and President of the Royal Society since 1945 called attention to the need for a very close contact between those who are concerned with chemical warfare, whether it be in research or manufacture, or in the application of chemical warfare weapons—the very close contact that they must have with all branches of the service.

"We have in our country," he said, "a series of committees, and there is one overriding committee which really deals with defense research policies. Now I feel that that may be all right in peacetime, but that in wartime it will surely be superseded by something which enables us to make more direct contact between policy and the changing situation which is characteristic of chemical warfare, because as research proceeds, the situation changes, and it is absolutely necessary, I feel, to have a very close contact between the research, the production, and the policy—the needs, the military needs and the tactics and strategy appropriate to chemical warfare."

He added, "as I see so many groups of industry naturally associated with this chemical warfare development—Cyan-

(Continued on Page 52)

Sir Ian Heilborn tells a tall Scottish tale at the annual Armed Forces Chemical banquet. Left to right: General Bullene, President Lawson, General Porter, and General Loucks.



GENERAL BULLENE ANNOUNCES REORGANIZATION TO PUT CHEMICAL CORPS ON SEMI-MOBILIZATION BASIS

This important announcement was made by General Bullene in his address at the AFCA dinner in New York, September 6.



Major General E. F. Bullene (right), Chief Chemical Officer of the Department of Army, and Brigadier General C. E. Loucks, Deputy Chief Chemical Officer, plan for the contemplated decentralization and reorganization of the Chemical Corps.

Preparing for any eventuality, the Chemical Corps is readying a decentralization plan that will put the organization on a semi-mobilization basis and facilitate future expansion should the nation be faced with an M-Day crisis.

The Corps' reorganization was outlined by Major General E. F. Bullene, the Chief Chemical Officer, during a talk on September 6 in New York City. The occasion was the dinner which followed the annual Fall meeting of the Armed Forces Chemical Association board of directors in the Hotel New Yorker.

The Corps' plan calls for the setting up of three operating agencies outside of Washington, D. C., under the command of three brigadier generals, to handle all of the operational activities. The first step in this reorganization, the naming of the three generals, was taken in July when the Senate confirmed the elevation of Colonels Henry M. Black, William M. Creasy and Leonard J. Greeley to the rank of brigadier general.

General Bullene's talk is as follows: "When I assumed the role of Chief

Chemical Officer, I had no intention of making any immediate drastic changes. However, a series of circumstances recently paved the way for me

to propose an operational system which, I believe, will make the Corps more efficient in the performance of its mission. In some respects this reorganization will put the Corps on a semi-mobilization basis, and in the next few minutes I will show you why such a move at this time is most logical.

"In April, the President directed the Department of Defense to examine its agencies in regard to further delegation of operational authority. This was followed by an overall management survey of the Chemical Corps by the Comptroller of the Army which had recommended the creation of additional positions beneath the Chief Chemical Officer with delegated authority for general supervision of the activities of the Corps. These actions tied in with a series of studies we had already been making in regard to decentralization of the Corps activities, and which had already resulted in moving the Chemical Corps School and the Replacement Training Center to Fort McClellan, Alabama.

"Study of all the recommendations and directives from higher authority resulted in our proposal to make a shift

BRIG. GEN. HENRY M. BLACK
Commanding General
Material Command



in the organizational structure of the Chemical Corps that would: First, comply with the President's objectives; Second, carry out the spirit of the Comptroller's recommendations; and Third, facilitate expansion in case of full mobilization. This proposal was submitted to the General Staff on 11 July and approved on 14 August 1951.

"What we have done is to take the three functions of our mission: namely, Research and Development; Procurement, Manufacture and Supply; and Training; and set them up as operating commands under a general officer respectively.

"Specifically, the Materiel Command will have full responsibility for and command over all Chemical Corps supply, procurement and manufacturing. We expect this command will have its headquarters in Baltimore under Brigadier General Henry M. Black. Under it will be the Corps' seven procurement offices, three manufacturing arsenals, three chemical depots, one storage area, the Inspection Equipment Agency, and the Technical Escort Detachment.

"The Research and Development Command will be under Brigadier General William M. Creasy, who will have his headquarters at the Army Chemical Center in Maryland. General Creasy will be in command of our two Proving Grounds, the Biological Lab-

Brigadier
General and



BRIG. GEN. WILLIAM M. CREASY
Commanding General
Research and Development Command

oratories at Camp Detrick, the Chemical and Radiological Laboratories, the Medical Laboratories, and the Engineering Agency at the Army Chemical Center.

"The Training Command, commanded by Brigadier General Leonard J.

Greeley, will be located at Fort McClellan, and charged with all training, educational, and troop activities assigned to the Corps as a part of its mission. The Chemical Corps School, the Replacement Training Center, and all troop units for which the Corps is responsible will ultimately be under this command. I might point out that one reason why we had selected Fort McClellan for the School and Training Center was because of the thousands of acres of open and wooded land available for practical demonstrations and problems. Our maneuver area at the Chemical Center was extremely limited.

"In effect, the establishment of these three commands will result in two definite changes: First, the Office of the Chief Chemical Officer in Washington will become primarily a command and staff organization with the operating responsibilities carried out by the appropriate commands. Secondly, the present unsatisfactory divided ar-

fense program. It could very well create serious delays that might impair the national security if we were to suddenly try to force this reorganization into being on a possible M-Day. The disruption which could well occur under such circumstances is obvious. Establishing these three commands outside of Washington now is considered to be a vital and necessary preparedness measure which logically should not be postponed any further.

"...I know you have probably heard rumors of this reorganization and rumors are usually very inaccurate; and for that reason, I want you to know the 'why' and 'whyfor' of the change."

OUR "SECRET WEAPON"

In two world wars we've overwhelmed the enemy to a large extent by force of materiel. Our ability to make and transport materiel of war to the battlefield has been a major factor in our winning these two wars. Today, courageous and battle-wise American troops in Korea, with a superiority in weapons, equipment, and other supplies, are defeating an enemy greatly outnumbering them.

Emphasizing the role of logistics in no way detracts from the combat soldier's importance. Rather it points up the only reason for logistic functions: to support and serve the combat soldier. For without his bravery and skill, what we produce and deliver to him is worthless.

In Korea, as in all our campaigns, it is the man with the gun—the combat soldier—who wins the battles. Our logistic know-how has enabled us to give the soldier what he needs to win battles, at the same time maintaining him in combat at the lowest risk to his own life.

Pride in our great capacity to supply, however, has created a false belief that in time of war our supply barrel has no bottom. Sufficiency of raw materials and American genius for mass production partly have been the cause for this feeling. Additionally, the troops usually got what they could use—often more than they could use—because the Army has always been quick to add to its own competence in the logistic field by adapting civilian techniques and skills in moving and distributing supplies. Rarely, except sometimes in the early stages of war, have American soldiers had to "do without" for any length of time.

—Officers Call



In full panoramic detail, photo shows paratroop drop on Nazdad, New Guinea, behind two spray-tank screens laid by Air Force battalions.

U N D E R T H E C

By Major General E. F. Bullene

Chief Chemical Officer, Dept. of Army

Combat in Korea has brought into operation some new developments in the art of war, and, at the same time, some of the older methods which had been considered out-of-date have been dusted off and brought back into use. But to the veterans of World War II, there has been something missing . . . the wholesale use of smoke screens.

The lack of such smoke screens as were laid on the beaches of Salerno and Anzio, or along the Moselle and Rhine Rivers, can be attributed to one main reason in the battle for Korea—the non-appearance of Red airpower in any appreciable quantity. As a result, the familiar war

The M-1 generator, developed early in World War II, was heavy and unwieldy, but it was by far the most efficient smoke producer ever built.

communiqué phrase of World War II, "Under cover of smoke our troops advanced . . ." has been as conspicuous by its absence as have been the grey blankets of observation-denying smoke.

Perhaps the earliest historical reference to the use of smoke in warfare is the Biblical account of the escape of the Israelites from Egypt protected by a "pillar of cloud by day and a pillar of fire by night." Evidence indicates that the ancient Chinese used gunpowder as a smoke-maker long before they ever got around to lobbing cannonballs with it. Both Caesar and Pompey used smoke as a weapon of attack in landing operations during the civil wars of the Roman Empire.

From that point on for nearly ten centuries history carries only fleeting references to the use of smoke in battle and these were usually of the irritating or "stink-bomb" variety used to nauseate the enemy rather than to obscure operations. In 1667 a Dutch fleet captured a British fort at Landguard, in England, by placing the bombarding ships in such a position that the smoke from the guns blanketed the fort and enabled troops to land with scaling ladders. The French at Seneff, in 1674, hung smoke-producing torches in the hedges, then quietly withdrew to other positions, leaving the enemy to blast away valuable ammunition on non-existent targets. Nearly a century later Charles XII of Sweden used smoke to cover a crossing of the Dwina River against the Russians. Reports vary as to how he did it; some saying he used damp grass, others crediting burning tar barrels.

During the Napoleonic wars and later in the American Civil War, the use of smoke for deceptive or screening purposes virtually disappeared. Smoke, in fact, became more of a nuisance than a blessing. The black powder then used emitted great clouds of choking smoke, which, incidentally, told the enemy exactly where the guns were emplaced. With the advent of explosive shells, both the guns and the targets were soon shrouded in smoke. In the Civil War, both the North and the South occasionally fired fields and woods to create smoke, but it was always an on-the-spot expedient and not a planned maneuver. Smoke from gunfire, in fact,





by Air Force battalion is shown landing at upper left, between the two banks of smoke. Enemy was entrenched on the hills in background.

COVER OF SMOKE

sometimes so blanketed the battlefields that firing had to be called off temporarily to let the smoke clear.

In the South African Wars, the Boers frequently fired the veldts to cover their retreats. This, however, was to place a fire hazard in front of the pursuing British and not to create a smoke screen. The Boers, incidentally, registered several loud complaints that the gunpowder used by the British "stank" to a point of being nauseating and was probably noxious.

Smokeless powder was introduced by the French in 1885 and the imminence of a return to visual operations impelled the British to make another try at smoke screening. About the turn of the century the British Army conducted a series of training maneuvers at Aldershot under smoke generated from candles of a type ordinarily used to find leaks in drain pipes. These, of course, were entirely ineffectual and the whole experiment was dubbed a "miserable failure." It isn't surprising that no further use or development of smoke was made by any major army until the outbreak of World War I. It is unquestionably true, however, that it was the very effectiveness of smoke as a screening agent that forced the development of smokeless powder.

Although the armies constantly neglected smoke, the various navies jockeying for power prior to World War I did not. The Germans made extensive experiments with chemical smoke generators on the aft decks of their ships as early as 1906. The American Navy in 1913, in maneuvers off Long Island, successfully tried out smoke screens made simply by cutting down the air supply to the fires under the ships' boilers. When the First World War broke, the navies were ready with smoke equipment. In 1915 several German cruisers escaped from superior British units through smoke screens and the entire German fleet, aided by smoke generators and floating pots, was able to out-maneuver and escape from the British Fleet at the Battle of Jutland in 1916, although the Germans were outshipped, out-weighed and out-gunned by nearly two-to-one. In the same year, the Austrian fleet used smoke to escape from the French fleet in the Mediterranean.

The earliest recorded use of smoke in tactical land opera-

tions of World War I was north of the La Bassee Canal in France in the fall of 1914 when a company of the British Devonshire Regiment escaped from an entrapment by firing a haystack and withdrawing under the protection of the smoke. Later a battery of artillery made good a withdrawal in the same manner. The actual planned use of smoke from special smoke generating equipment did not come until the following year during the summer of 1915, and closely coincided with the introduction of toxic gas warfare. Indeed, it is likely that the use of smoke actually came about as an adjunct to the use of gas. The dense clouds produced in damp weather by the release of chlorine effectively covered the German infantry advancing behind it and demonstrated clearly the tactical advantages of concealment during offensive action.

The British went a step farther to stage attacks under artificially generated smoke cover without gas. This caused the Germans to don masks while the British advanced unmasked behind the harmless smoke. The British also learned some hard lessons in other deceptive uses of smoke. At Loos, in September of 1915, smoke was wrongly used as a blind by lighting candles in the British trenches, calling down upon their heads a heavy and deadly barrage of artillery fire. Thereafter, the British frequently smoked unoccupied sectors to make the enemy waste ammunition under the impression that an attack was imminent. Needless to say, the Germans quickly picked up such tactics and used them against the Allies.

Generally speaking, the Germans took and held the initiative in the development and use of smoke (as well as gas), but they were invariably outstripped almost at once by the Allies, especially the British. This is probably due to the fact that, in the later stages of the war, when smoke was really coming "into its own" the Germans were suffering a crippling shortage of chemicals. By mid-1915, the British had developed a smoke-pot that burned a mixture of pitch, tallow, black powder and saltpeter. Within two months, the Canadians staged the first really large-scale smoke operation of the war in an attack against Messines Ridge, using smoke-filled shells fired from trench mortars. By 1918 the



The M-2 produced almost as much smoke as the M-1 but was light enough to be handled by two men. Mounted on a jeep, it could be moved about quickly for large-scale screening operations. Above shot was taken near Mantes, France.

use of white phosphorus and other smokes had become standard in all of the belligerent armies and was being projected primarily by chemical mortars, but also in hand and rifle grenades, artillery shells dropped from planes and spread by tanks generating their own smoke from chemicals in the exhaust stacks. The development of white phosphorus and other smokes by the Air Force and tanks as a smoke agent were still in the experimental stages when the war ended.

It is generally agreed that the tactical use of smoke in the first war lagged behind the use of gas as a sort of unwanted stepchild to the more important casualty-producing weapon. But it is agreed that its use saved untold thousands of lives, contributed to successes on both sides in many important battles and made possible—or, at least, more effective—the massed tank tactics that eventually resulted in the cracking of the Hindenburg Line and the defeat of the German armies.

In the years between the two world wars, research and development in smoke screening received a tremendous boost, not all of it from the unsavory publicity it received from bootlegging operations here in the late twenties. The

Fog oil screen laid to cover bridge traffic from direct enemy observation during Italian campaign shows its tactical advantages over earlier chemical smokes. Fog is non-irritating and not heavy enough to impede local operations (note shadows), but obscuration is total within a few yards (background).



development of new smoking techniques and equipment, in fact, closely paralleled the triple development of the airplane as a reconnaissance, bombing, and smoke-dispensing weapon. In other words, the airplane provided the simultaneous means for bombing and large-scale observation, thus vastly increasing the need for screening. At the same time, the plane provided a means of laying a smoke-screen in a matter of seconds, a method so efficient as to render obsolete almost every smoke-laying device in use up to that time.

Even with new and improved smoke devices, we were by no means prepared for the eventualities of World War II. The equipment we had at the time of Pearl Harbor was adequate for both offensive and defensive tactical ground operations. But the indiscriminate bombing of cities and ports by the Germans and the later beachhead landings brought about a need for obscuration practices on a hitherto undreamed of scale. Fortunately, the Chemical Corps was already working on still better smoke defenses. Attempts to blanket the Panama Canal Locks in tests in 1939 had proved that neither white phosphorus nor sulphur trioxide-chlorulfonic acid (FS) could produce enough smoke and that HC was not sufficiently persistent for such a big job. The British ran into the same problem in their 1940-41 attempts to shield their industrial areas and ports, using oil-burning pots manned by civilians.

The British succeeded in producing the "Hasler" crude oil burner, which, although mobile, was much too heavy for fast movement. In 1942, the Chemical Corps developed the M-1 stationary generator, which produced a hydrocarbon oil and water fog having much higher persistency, light-diffusing and non-irritability qualities. Basic research on the M-1 was conducted by Dr. Irving Langmuir of the General Electric Research Laboratories, who has since become famous for his proclivities in artificial rain-making. The machine was still too heavy and looked like an old-fashioned horse-drawn fire engine, but it was by far the most efficient smoke-producer ever built.

After Pearl Harbor some 15,000 of the M-1's were set up around the Panama and Sault St. Marie Canal locks and also around the vital aircraft plants on the West Coast. Another 20,000 of the generators were held in reserve in the event of enemy bombing in this country. The positions were held until the middle of 1943 when it became obvious that there would be no bombing here and the smoke companies were moved to other theaters. In the meantime, Chemical Corps technicians had succeeded in developing the M-2, a highly efficient two-man portable generator which went into production in time for use in the invasion of France.

Space here will not permit anything but a sketchy account of the smoke operations in World War II. In the beachhead operations in North Africa and Italy the use of smoke became standard practice and the demand for smoke equipment and personnel became so great that the supply never did quite catch up with the demand. In addition to the screening of actual invasions, smoke crews were called upon for the long-time task of screening port installations from bombing raids, notably at Bizerte, Salerno, Anzio, Naples and Normandy itself. Effectiveness of such screening is borne out by the fact that at Naples, for instance, between October, 1943 and June, 1944, not a single Allied ship was sunk in more than 40 air raids. The frustrated enemy airmen were reduced to the bombing and strafing of the smoke generating units, inflicting some casualties. As the Allied armies moved across France and into Germany, and with the decline of German air power, the smoke units were pulled out of the port installations and moved in with the armies to screen battle operations.

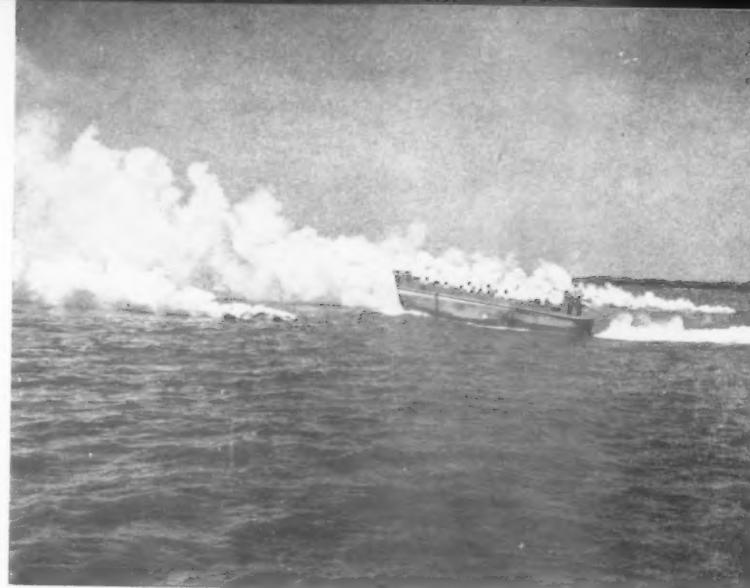
river crossings and engineer projects. In all, smoke units participated in more than 100 operations in forward areas and burned more than 250,000 gallons of fog oil in support of infantry and engineer actions alone.

By comparison, smoke saw little action in the Pacific. Its use was limited almost entirely to the Air Force, which used smoke on a number of raids. Paratroopers took the Japanese airstrip at Nadzab in New Guinea in 1943 behind a spray-tank screen, and a large enemy shipping fleet was effectively clobbered in Simpson Harbor at Rabaul after planes blinded the heavy enemy antiaircraft batteries with white phosphorous bombs. Smoke was used occasionally in ground operations on Leyte and Luzon and by the Australians on Borneo. Generally, however, the nature of the terrain and the climate in the Pacific made smoke operations either ineffectual or unnecessary. A number of smoke generator units in Europe after V-E Day were alerted to go to the Pacific for the invasion of Japan that never came off.

Smoke played a large part in naval operations throughout the war, especially in the early stages prior to the advent of radar. An instance was the first major engagement of the war when three British light cruisers, the Ajax, Achilles and Exeter, caught up with the German pocket battleship, Admiral Graf Spee, off the coast of Uruguay in December of 1939. The German ship vastly out-gunned the British cruisers and could easily have kept them at bay, but the British, through a masterful use of smoke screens, managed to get in close enough to bring the Graf Spee under their guns. The battleship called it quits, ran into Montevideo Harbor and scuttled herself. Later countless tons of Allied shipping were saved from the depredation of enemy submarines by the screening tactics of the escorting destroyers. When the Kamikaze raids became a serious threat to the beach operations at Okinawa, a Naval unit, directed by a Chemical Corpsman, blanketed the entire beach and anchorage with smoke. None of the ships under the screen were hit by the suicide planes, but, significantly, the American destroyers outside the screen took a beating.

In Korea, tactical and large-scale smoking activities have been negligible, but not because of any lack of preparation or willingness on the part of the Chemical Corps. Circumstances have been such that smoke just hasn't been called for. The Communists' almost total lack of air power and the relative paucity of enemy artillery have eliminated any need for smoke support. Large quantities of white phosphorus have been used, but almost entirely for anti-personnel work rather than for screening. In most of the tactical operations, where smoke would normally have been used, either the Reds have cooperated by pulling out in advance or the weather has obliged by fogging up the countryside anyhow. In several large-scale operations, notably the Inchon landing and the withdrawal at Hungnam, smoke units and equipment were on hand, but in no instance did circumstances require smoke.

As a result, the various Smoke Generator outfits sent to the Far East have largely spent their time on such routine tasks as mixing napalm at Air Force bases or in furnishing shower baths and fighting fires with chemical decontamination equipment. Late last spring, a Chemical Corps smoke generator unit was sent to the front for use in combat, but at this writing they still haven't run into any. The nearest they came to combat operation was a two-day screening of the temporary bridges across the Han River south of Seoul to protect the troops reentering the Korean capital. Enemy resistance, however, never materialized. The company made a dozen-odd dry runs for training purposes and to test enemy reaction to smoke.



Landing craft moves shoreward behind screen laid down by floating smoke-pots. Fact that the men are sticking their necks out shows that this is a training operation and not the real thing.

Research and development in smoke is continuing apace at the Chemical Center at Edgewood, Md., most of it directed toward getting the bugs out of present equipment and the designing of more efficient smoke producers. Efforts are also being made to develop a white phosphorus that is not only more persistent but one that will not billow upward in a column. This fault has proved to be WP's greatest drawback for screening purposes in both the Korean conflict and World War II.

The future of smoke's role in modern warfare is assured. It has been contended that the advent of radar and infrared scanning devices, both of which will penetrate smoke, have made artificial obscuration by smoke obsolete. That admittedly is a possibility, certainly in so far as the screening of ports and cities against high-level bombing is concerned. It is even more likely in naval engagements where ship's positions can be pin-pointed through the thickest of smoke or fog. Nevertheless, the tactical use of radar in observing troop movements is still a long way off and artillery must still see what it is shooting at. As long as this is true, smoke will continue to be used to make the enemy work under conditions of night while our men work in the light of day.

A good example of large-scale protective screening. Entire Allied port installation at Palermo, Italy, here invisible in the center of the picture, is blanketed within a few minutes during an air raid alert.





N I G H T S M O K E A T S E A

By Rear Admiral N. S. Prime, USN (Ret.)

Full moon in late evening on the serene Pacific is usually a lovely and a marvelously peaceful balm. But there are times that are not usual.

Among the complex and detailed Operation Orders for the night of August 13, 1943 were those directed to a small sub-division of a Task Group of a Task Force. Two destroyers would act as convoy for three LST's, would proceed etc., etc.

Arrive at 2330 off Kukumbona, patrol off-shore awaiting completion of loading of LST—, then proceed as directed by Group Commander. At 2330 two dim, gray shapes in approximate column slipped onto a westerly course three hundred yards off the beach, slowed to ten knots, and made their presence known to the Group Commander, then took position and commenced a slow anti-submarine patrol.

The night was dark, completely dark, without moon or stars. A high stratus overcast blanketed the whole of Iron-Bottom Bay,—Savo, on the charts. Radars searched silently, picking out the shore-line and the vessels cruising on patrol as well as those anchored in the loading zones. There were no lights visible.

The captain of the leading destroyer, that in which the division commander rode, hunched in the chair inside the bridge structure, just forward of the helm. Through his mind ran the orders he had received that afternoon. They told him enough to let him get to the right place at the right time; enough to give him a fairly clear idea of where he might expect to find the other groups of the force during the operation—but mighty little more than that. He searched the sky and was somewhat

reassured. With this overcast the defensive position against bombers was good. Search-radar would find them and would direct the guns. It would be hard for them to be accurate in bomb-drops. But if the overcast failed—what then? A bright moonlight night would be a different story. He shrugged—no use borrowing trouble!

Time passed slowly. The small, routine noises of the ship went on without impact on the captain's consciousness. They were routine, normal; and therefore not important. Then the telephone, swiftly answered by the quartermaster of the watch. "Yes-Aye—Aye," the man hung up and turned. "Communication reports 'Condition Yellow,' Sir," he said. The Captain spoke softly, "Mister, you will please call the crew to General Quarters."



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Minutes later all reports were in. The Captain acknowledged; went to the Public Address Mike and spoke. "Condition Red is reported now, men. Anticipate Air Attack from the Northwest. We are now on course East. All guns train to the port quarter. Commence Radar Search. Director Control Five-inch; forties in Local." He slowed to seven knots; called the Engine-Room — "Chief? All boilers on the line now, please. Ready for emergency powers." He returned to the chair and waited. The intercom spouted. "Two Bogies, low, very fast, nearly overhead." "Hard left," the Captain said, "two hundred revolutions." "I am reversing course to the left, speed twenty," he told the fire-control.

In an instant fireworks started from the shore. A battery of Army AA cast loose with rapid-fire. The battery was half a mile down the beach. Some light craft nearer to the battery added 20-millimeter fire to the 90's. The Captain spoke, "Take a quick search all around. If you find nothing else get back on those two," to the director. He waited, straightened out on course West and slowed to fifteen. A sudden smash of fire astern as every gun available down there let loose. Then a fearful roar, high crash of flame leaping outwards and then upwards. The beach and water suddenly illuminated for a thousand yards. A ship was hit, badly hit, probably gone. He searched up and to the west of the flames. They had dropped and would streak for home now. "Watch to Starboard," he told the Public Address. A shadow, a streak just tinged by the reflected light. Others, too, had seen. The after Forty millimeter opened up. He watched the tracers. The enemy was not more than three hundred feet up, level off and full out. From the bridge the tracers looked left. "Good shooting," he spoke aloud, and realized that all eyes were out to starboard. The ship was shaking and the gun-flashes blinding. He swiftly turned and watched the surface-radar screen. Nothing nearer than a thousand yards.

A cheer broke. To starboard the enemy showed a streak of light. A hit unquestionably. The Captain watched. Light grew stronger on the enemy plane. Its starboard engine was on fire. As he watched the plane wobbled, ducked to starboard, then plunged hard and straight and hit the water. Immediate explosion and then a pocket of flame dull red and shadowed by black smoke that was not seen except against the flame. So. Vengeance, but the cost was lop-sided in favor of the enemy. A ship, one, no matter what size, was far more valuable than the plane. A bitter dose, that.

"Condition Green." General Quarters was secured and the slow patrol

was resumed. The Captain paced the bridge wing, now, and brooded. This was not well done. There was a fault, a glaring error in the thinking that had led to a lousy trade of one medium bomber for a ship and many lives. Sure, the best defense is a vigorous offense. Well, our forces had been offensive with everything they had. They had gotten the enemy, but too late. There should be a way, a method, a device which would hold and confuse the enemy bombers long enough for the guns to do their job. Nothing could be 100%, of course, but this sort of thing that had just happened must be cut to a minimum. Hell, it could have been us. The Captain was pretty tired. He turned to the business at hand. Still, the problem bothered him, stayed with him. He put it in the back of his mind, determined to think it out later.

Through the night, the next day and the next night the slow convoy made its way through quiet seas. Radars searched vainly. No enemy showed. The operation approached its climax. That second night had been like the first, overcast and dark. The ships were practically invisible one from the other. The Captain studied his almanac. It told him that the moon was one night short of full, and that moonrise was about 1900. Only the heavy overcast caused the darkness, then. And what would tomorrow bring? He hoped, but thought it unlikely that our luck would hold. The percentage was against it. Three nights out of three were too much. Who wrote these Operation Orders, anyhow. Didn't he have an almanac and know that the moon was full?

The next day was hell. Pure, unadulterated hell. The dawn landing was opposed by enemy air strength, to begin with. Not that it did them any good, for their bombs were 100% misses, we had no casualties, and the

enemy lost three planes. But the whole bay was churned up with ships racing around trying to avoid bombs and to keep off the beaches, and at the same time firing everything they had at the Japs. Very exhausting. And in the middle of it the air search radar went out. Completely. Kaput. Burned a transformer and no spare. Not at all funny.

Soon after dawn the main body of the force left the area to return to base. Three LST's were left on the beach unloading, and two destroyers were left in the bay to guard them. They looked small and lonely. They were lonely, and they felt small. The leader's skipper called the other on talkie. "My search is out. Please report everything in the air other than ours." He got an "Aye, Aye," and was left with his worries.

After the third enemy attack, about three that afternoon, he checked with the Chief. The report was fifty thousand gallons on hand. Another worry. He figured that he could take maybe two more attacks and get home safely. More than two and he might be left helpless with dead fires. Well, that was up to the enemy. He reported to the Division Commander. "Jim, all right so far, but I'm worried about tonight. We'll get out about 2030, if the unloading goes as it has up to now and the enemy doesn't get in our hair again today. They've lost six so far, and I think they'll lay off till after dark. But the moon will be full and high tonight, and with this clear day we have to expect a night as bright as day. As I see it we haven't enough force to do a good protection job with guns, and our own air cover will be gone at dark. I propose to use smoke as the opportunity arises. Will you give permission and tell our friend over there?" The Commodore thought it over and concurred. "We'll be very fortunate to get through," he said. The Captain concurred with that, though silently. He wished he were a very long way from there.

One more attack came, late in the afternoon. This one was all air. The fighters were superbly led on that one, and not a bogie got through. Our boys got nine and lost two, and the red circles fled for home. At 1490 the ships on the beach reported they would be done in a half hour, and we stood in to pick up the Task Force Commander from shore. One lone enemy search plane was reported, far off. That was bad. It meant that we would surely get it that night. As the formation got out of the bay and went into the straits, the enemy watcher closed in to make sure of his count. He had guts. Passing within fifteen hundred yards, low and north of the pass, he lazily passed from port to starboard across the ship's



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sterns. Swinging the guns to starboard we fired everything. All that happened was that the Captain, sighting through the starboard pelorus, got himself blasted off the bridge platform by the fire of Number Two five-inch. It was a very sore three-striper who was helped to his feet, shocked and dazed, and deaf as a post. There was nothing permanent about it, though, and twenty minutes later he felt that all his gears were back in mesh again.

The moon was not silver. It was gold. You felt that you could reach out and touch it. You wished you could point a five-inch at it and put out the light. Formation speed was ten and a half knots. Without air cover; with no search-radar; with that moon we were naked. Doom was a sword and its point was at the back of the Captain's neck. He called the engine-room. "Chief to the bridge." When he came the Captain pointed to the formation. "They will certainly come," he said. "We are sitting ducks. We have no radar that will pick them up, and our shooting will be blind. It is up to you. Go down and check all the smoke cocks. To hell with the oil. When I call for smoke I want gobs of it, all of it you can give me. And when I want clear stacks you give me those, too." The Chief gave his "Aye, Aye," and went below.

They came at 2130. The junior ship, to the southward of the formation, reported bogies to the north at twenty thousand yards. Wind was light, seven knots out of the east. "Well," said the Captain to himself, "Here goes nothing." With the enemy at a calculated fourteen thousand yards, he turned

down wind, went to twenty-five knots, and called for boiler smoke. He got it. Smoke poured out of the stacks; thick, heavy, oily smoke. Steaming north, west, and south, weaving and circling the ship made smoke over an area two to three miles square for forty-five minutes. Finally, moving to the downwind side of the blanket, the Captain changed course to upwind, stopped smoke, and slowed to ten knots to minimize wake. The smoke blanket stayed thick and heavy, moving slowly downwind, and held its shape well. After ten minutes of holding his breath the Captain sighed, changed course to the right and went after the formation at twenty knots. He went to the talkie. "Where are bogies?" he said. He never heard the reply. A volcano of noise and flame burst from the sea on the starboard quarter as a stick of four heavies blew on impact with the water. "Hard left," he shouted. "Three seventy turns." "Make smoke," and the ship made speed and smoke as it headed for the formation to cover it with a blanket as swiftly as could be. Into the talkie the Captain spoke. "Make smoke, cover formation, scatter formation." A minute later, with the LST's in the midst of their turns a second stick of bombs blew close aboard one, the center. In another minute they were blanketed. For one hour and twenty minutes, then, the two destroyers maneuvered at high speed to windward of the formation, keeping tabs on all ships by radar, and made smoke enough to keep the slow ships completely hidden. Then, with no warning at all, the moon disappeared. So did all

light. The overcast had blanketed down again. In two minutes the juniors reported all bogies off screen. They had gone home, defeated, by smoke.

In talking it over afterwards with the Task Force Commander and the Division Commander the skipper explained himself. "I've never been up there at night with a moon," he said. "I couldn't be sure how far away they could see the formation. If I could give them a false formation, a smoke-blanket that didn't cover any ships, I thought that maybe I could fool them into dropping in the smoke or maybe get them so confused they could not find the formation after I got through. And I think it was successful, too. Even though they did find us, and through us, the formation. We simply didn't have enough ships to keep the thing going long enough and still to protect the group in case the trick failed. One ship had to do it all. At that, I believe it was chance that led to the Japs finding us after we got out from under. And the whole plan, I think, has merit and should be studied and perfected as a procedure. After all, we had a slow-moving column, a bright night, insufficient power to protect, yet here we are, all safe and sound. The proof of the pudding is still in the eating. And we were protected by smoke and nothing but smoke." And he added, "Anyhow, I've been on my feet for fifty-two hours. Me for the sack." "Mr. Jackson, she's yours. Call me if we're attacked or when you sight Savo Island. Secure from General Quarters and set the watch. And whenever you need to, make Smoke."



*Army
Chemical
Training
Center*



In the history of the Chemical Corps, the 9th of April, 1951, will go down as a most important date. On this day, the Army Chemical Training Center was activated at Fort McClellan, Alabama, and at long last the Corps had an adequate home in which to conduct all of its training activities.

Department of Army General Order 17 created the Chemical Training Center and placed under its command the Chemical Replacement Training Center, the Chemical Corps School and all Chemical Corps Troop units to be stationed at Fort McClellan.

The choice of Fort McClellan as the post on which to concentrate the Corps' Training and Troop activities was a splendid one. Most of the credit for this must be given to the Chief Chemical Officer, Major General E. F. Bullene, whose vigorous action secured this training site for the Chemical Corps.

Fort McClellan was first established in 1917 as an artillery range and then covered only about 1000 acres. In 1929, it was officially created a "Fort" and designated an Infantry Post. In the early part of World War II, the 27th Infantry Division was trained here and for the rest of the war, the Post was used as an Infantry Replacement Training Center. Expansion during the war years was very great. The main post and the artillery ranges now cover more than 40,000 acres.

Many famous officers have commanded Fort McClellan, among them Lt. Gen. Simon Bolivar Buckner, who was killed on Okinawa, and Lt. Gen. James A. Van Fleet, brilliant commander of the III Corps in Europe, and now the Commanding General of the Eighth Army in Korea.

The Fort is located in the foothills of the Appalachian Mountains of northeastern Alabama. The elevation of the cantonment area is about 800 feet, while the hills which form the outer rim of the Main Post rise to heights of over 2100 feet.

Training areas and ranges are among the most complete in the Army. The Post has two known distance ranges, each with eighty firing points. There are small arms transition and field firing ranges, two complete village fighting courses, rifle and hand grenade ranges and courts, machine gun ranges and close combat courses. There are ranges for rocket launchers, mortars of all calibers, recoilless rifles, flame throwers and tanks. All of these are located on the Main Post and they are sited both for realism and for proximity to the cantonment areas. Our Chemical Corps troops can march from their barracks areas to any range in 30 minutes or less. Outdoor training areas are extensive and the varied terrain permits realistic conduct of all types of field exercises.

The Pelham Range is a separate reservation located about 5 miles west of the main post. It covers over 22,000 acres and is used for maneuvers and as a firing range for artillery, heavy mortars and tanks. The terrain is not as hilly as that of the Main Post but is rolling country, partly wooded. The impact areas are quite large and observation is excellent. The ground forms lend themselves admirably to the conduct of combat training.

On the Main Post, the recreation and welfare facilities are excellent. There are chapels in each troop area and the lovely Silver Chapel at Post Headquarters. There is a main Service Club in the center of the Post and also branch Service Clubs. All are fully furnished and equipped. Four motion picture theatres and an open air theatre provide plenty of room for troop entertainment. A mammoth concrete amphitheatre, seating 18,000 people, is used for boxing matches and soldier talent shows.

The Newcomen Library is one of the outstanding features of Fort McClellan. The present collection of over 20,000 volumes is growing steadily and current magazines and newspapers are available to all troops. The Library

is beautifully furnished and adequately staffed with excellent Army Librarians.

Five miles of four lane concrete boulevard separate Fort McClellan from its own city of Anniston, Alabama. This community of over 40,000 population has well-earned its name of "The Model City." Back in 1883, the founders planned and built an ideal town and their descendants have lived up to the high principles of their forefathers.

Anniston is the largest producer of cast iron soil pipe and fittings in the world and it is the largest textile center in Alabama. This diversified manufacture helps to create a sound prosperity.

But of far greater importance than their material possessions is the fine spirit of the people of Anniston. The citizens of the Model City feel that Fort McClellan is really a part of their own community and that the Army people stationed there are not merely to be welcomed to Anniston as visitors, but are to be considered as full fledged members of the city.

The first Commanding Officer of the Army Chemical Training Center was Col. Theodore P. Gahan, who arrived at Fort McClellan on 9 April, 1951, with nine officers and twenty-two enlisted men, to activate the Center and to prepare for the arrival and operation of its subordinate units. The C.P. was set up in one of the permanent barracks buildings of the Main Post and the Staff went to work. There was much to be done but the job carried on smoothly from the very beginning.

Fort McClellan, a Third Army installation, is commanded by Brigadier General Theodore F. Wessels, who with all of his Staff, has given the Chemical Corps the finest co-operation. General Wessels and his people operate on the principle of "The Staff serves the Troops," and the service thus rendered has been splendid.

The advance party of the Chemical Replacement Center arrived from Edgewood late in April. Then men went to work with a will and all was in readiness for the main body when it moved early in May. Good prior planning effected the movement of the entire Replacement Training Center with all of its personnel and equipment from Edgewood to Fort McClellan with a shut down of training of only two weeks. Within seven days of its arrival at the Fort, the whole RTC was in full operation.

A Chemical Corps Leadership School was established in June. Carefully selected trainees are sent to this school upon completion of Basic Training. The course is of eight weeks duration and it is rugged. Students are trained in the principles of leadership and in methods of military instruction and much emphasis is placed on physical conditioning. All students are volunteers and the esprit de corps and smart appearance of these fine young men is an

Enlisted men's barracks, Army Chemical Training Center, Fort McClellan, Ala.





Headquarters, Army Chemical Training Center, Fort McClellan, Ala.

inspiration to everyone at Fort McClellan. The Leadership School furnished the Guard of Honor for all visiting VIPs and this guard has rendered the honors for over a dozen generals and for numerous lower ranks, all of whom have been loud in their praises for these future leaders of our Army.

Early in May, two Reserve Chemical Corps units were called to active duty at Fort McClellan. These were a Chemical Service Battalion Headquarters and Headquarters Detachment and a Chemical Depot Company. When they reported in, they were barely up to cadre strength but fillers were obtained promptly and both units started their training at full strength. These organizations may well be the foundation of a Unit Training Center at Fort McClellan.

The Chemical Corps School began to phase out of Edgewood, Maryland, on 1 July, sending advance parties to Fort McClellan shortly thereafter. On 15 August, the School was officially transferred to its new home. The School will re-open on 17 September and in October it will be operating on a full schedule of classes. The School is housed in a large masonry and steel permanent barracks which has been completely remodeled into a school building with more classrooms and office space than the school had at Edgewood. Pending legislature will permit the construction of a new school with all supporting buildings, including quarters for Staff, Faculty and Students.

The present Commandant of the Chemical Corps School is Col. Ragnar E. Johnson, who took over command upon arrival of the School at Fort McClellan.

The School troops, consisting of the Composite Troop Unit and the School Department, arrived in August and assisted in the preparation of buildings and other installations for the use of the School.

On 18 August, Brigadier General Leonard J. Greeley assumed command of the Army Chemical Training Center. General Greeley's long Army service includes much command and staff experience, which will be of great value to the Chemical Corps in the accomplishment of its training missions.

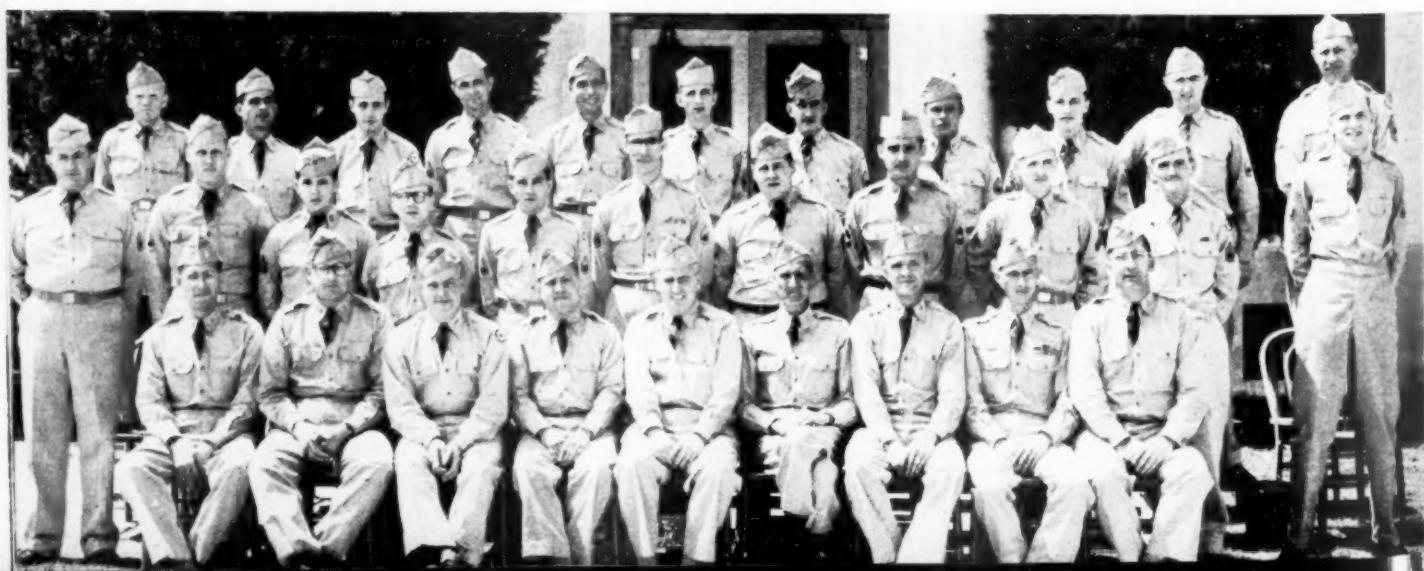
The concentration of all Chemical Corps training activities at Fort McClellan will immediately improve the quality of the Corp's military education. It is General Greeley's goal that Chemical Corps officers and men shall be the finest trained personnel in the Army. Much hard work lies ahead but the physical means are at hand, capable people are available and under General Greeley's leadership, this objective will be attained.

AFCA TO AWARD PLAQUES TO TOP MAN OF EACH LEADERSHIP COURSE

The Armed Forces Chemical Association has set up an award to be given to the outstanding man of each Leadership Course at the Army Chemical Training Center. This action was taken by the Executive Committee of the Association at their monthly meeting in September. The Committee recognizes that these leadership courses are of great significance to the Chemical Corps. Many of the graduates of each course will become officers of the Corps, others will become noncommissioned officers. The award will exemplify the Association's deep interest and concern in this important phase of the training program.

Selection of the recipient of these awards, which will consist of a suitably engraved plaque, will be made the Training Command. The presentation will be sponsored by the Fort McClellan Chapter of the Association. The winners will be reported, and pictured, in the publications of the Association.

Original officers and enlisted men assigned to Army Chemical Training Center, Fort McClellan, Ala., when the ACTC was organized 9 April 1951





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MINESWEEPERS GO IN FIRST



BEST NAVY ACTION SHOT . . . of the Korean war this photo has been called. The tragic shot was taken as an ROK ship operating with U. S. minesweepers in Korea minefields exploded a mine. The two ships seen minesweeping are the USS KITE (AMS 22) and USS REDHEAD (AMS 34), veterans of Korean combat sweeping.

By R. M. Hartmann, Lt. Cmdr. USNR

"I didn't know it could be done," said Lieut. Col. R. S. Emmerick, USA, senior KMAG officer on Korea's east coast throughout the first six months of United Nations retreat and advance. He was referring to fire support by the USS MISSOURI whose shells were bursting among enemy troops three hundred yards in front of his foxhole. The next day the Colonel led his troops on the UN offensive that went 250 miles in two weeks with naval artillery paving the way along the Pusan-Manchurian transportation system.

Another thing the colonel as well as most military people may not realize is that before the MISSOURI or any fire support ships can get close to shore in Korea's shelving shallow waters, little minesweepers must go in first and clear large areas from possible enemy mines so the large ships can be risked in primary bombardment missions and close fire support of troops up to twenty miles inland.

Minesweepers have other jobs besides certifying safe passage for combat ships around Korea. Troop ships, supply and amphibious units must be able to go anywhere

FRIENDLY KOREANS AND MEN OF MINE SQUADRON THREE . . . post a sign on the beach at Wonsan to greet troops and marines who landed after the minesweepers cleared channels and anchorages through the biggest minefield known. Four minesweepers were lost but not a single transport or support ship was damaged.



operations plans dictate. Again, minesweepers go in ahead into channels, ports and harbors, if necessary weeks before a landing and sweep enemy mine fields, often under fire from shore batteries.

Because of their tremendous power and the slim chances for detection, no weapon is more feared by sailors than underwater mines. In Korea the communists have used mines extensively in attempts to prevent or delay support of outnumbered UN ground forces ashore. At Wonsan the Navy believes communists assembled and laid thousands of mines and it is known that mines are still being laid in small numbers at night by small enemy craft that evade our patrols in fog and rough weather. This makes the hazardous minesweeping job a never-ending one. Yet after over a year of war in Korea, the mine force is able to boast that not a single ship that has sailed in waters swept by them has been damaged. This adds up to one hundred percent success in a task where a relatively few minesweepers have had to work continuously sweeping and resweeping huge expanses of water on both coasts of the island-dotted peninsula.

The same "no damage" success does not hold true for the minesweepers themselves or ships which have steamed in unswept coastal waters. Four U.S. minesweepers have been lost with heavy casualties in enemy minefields off Korea's east coast. Two ROK minesweepers have also exploded after hitting the big Russian-type mines. Three U. S. destroyers have hit mines and although all managed to make port, they were put out of action for months and lost many men, killed or wounded by the underwater blasts.

In all, nearly one quarter of the Navy's war casualties in Korea have been the result of enemy mines. Pointing up the dangerous work of the minesweepers, a mine force making up less than two per cent of all naval personnel in the Far East, have suffered about one-fifth of all casualties listed as dead or missing alone. It is only fair to point out

that when a ship explodes a mine, the proportion of dead and missing to wounded is much higher than average.

In addition to the U.S. Navy ships sunk or damaged by mines, other UN ships have suffered losses as well as a number of units of the small ship ROK Navy.

"You can't spend many months in mined waters without getting it . . . and still not believe in luck," said Lieut. Ed Flynn of Ozone Park, N. Y., commanding officer of the USS INCREDIBLE (AM 249), when the ship returned in August to the states after three and a half years in the Far East. He vividly recalled six particular times when he was sure his ship would be blown up. In her closest call, the INCREDIBLE survived the thirty minutes at Wonsan when the two other minesweepers in their three ship formation hit mines and sank in front of her. The INCREDIBLE was maneuvered into safe water under fire from shore batteries and managed to rescue twenty-seven survivors from the USS PIRATE and PLEDGE.

One of the three types of minesweepers operating in the Korean war, the INCREDIBLE is an AM (fleet minesweeper), a 180-foot, steel-hulled ship with a crew of about eighty-six officers and men. Similar in type to the PIRATE and PLEDGE which went down at Wonsan, these AM's have been in the Far East since the end of World War II or shortly thereafter. When the Korean war began they shifted into combat sweeping and have participated in every minesweeping operation on the east coast from Pohang in the south to Shongjin, near the Manchurian border.

The AM minesweepers were built in large numbers during World War II. During the Philippines campaign and on to the end of the war in Japanese home waters, they swept mines in huge formations of thirty-six ships and more. Other jobs found them used as picket ships off Okinawa and as antisubmarine escorts for slow cargo ship convoys. Later some of this class were "lend-leased" to Russia and Nationalist China. As a type, these ships are

A few hours after the U.S.S. BRUSH struck a mine in North Korean waters her Sister Destroyer, the U.S.S. MADDOX rushed to her assistance. The explosion tore a hole 75 feet in circumference in the side of the BRUSH and took the lives of 13 of her crew. The injured were transferred to the MADDOX over lines between the two ships. The BRUSH was taken 475 miles to port by her gallant crews.





PUTTING ON THE BRAKES . . . the winchman on board an auxiliary minesweeper checks the sweep cable streaming off the drums. In heavy weather the little ships are roughriding and handling the gear is a job for sailors with plenty of strength and stamina.

giving way to the 220 foot AM, a slightly larger, more powerful fleet minesweeper several of which have been activated from mothballs and ordered to the Far East as replacements for the 180's. Often in the division and squadron organization for minesweep operations, the AM type is designated as flagship and acts as command ship for a group composed largely of smaller wooden-hulled auxiliary units, the AMS's.

Another type ship which has been employed extensively in minesweeping in the Korean campaign, the DMS (destroyer minesweeper) is a high-speed, destroyer hull design. These ships, few in number, have been valuable in open water clearance sweeps. They are handicapped by their

designed higher operating speed, less maneuverability and deeper draft for minesweep work in shallow waters and close to shore in restricted channels. In the first phase of a minesweeping mission, these ships lead the way and in short time open approach channels for the smaller, shallow draft ships which take over in the shelving waters nearer the Korean landing beaches and port anchorages. The DM's with their destroyer-type armament, fire control and sonar equipment act as escorts and supply fire support to the smaller minesweepers which often sweep within range of enemy guns. Besides their minesweeping work, they have been used flexibly in independent bombardment missions and patrol and search routine in the UN Blockade and Escort Force.

With their larger ship, seakeeping characteristics, the DM's are the "luxury liners" of the mine force. More self-sufficient and comfortable for the crew, these ships' versatile abilities keep them in the war zone for two or three months at a time before they are ordered to return to Japanese ports for short periods of recreation and maintenance work. With minesweeping their primary job, shore bombardment, escort and patrol, and fire support assignments keep them busy too.

Also veterans of peacetime minesweeping in Japanese waters before the Korean fighting started, the DMS's have been on the spot in every kind of naval surface action. The USS ENDICOTT (DMS 35) is typical of the ships of MINRON ONE in the Far East. At one time she reported to the U. S. 25th Division, and fired in direct support of troops at Chin Hae, west of Pusan, in the days of the Pusan perimeter. Her main batteries fired direct and indirect by day, and interdiction fire at night.

The ENDICOTT was at Wonsan and rescued over one hundred survivors of the minesweeper sinkings there. She silenced enemy guns in a thirty-five minute engagement. At Hungnam the ENDICOTT and other minesweepers cleared a channel and embarkation area for the transports which took 105 thousand of our troops out of encirclement after the Chinese entered the war. Later, in a winter blizzard, she was first at the scene when the Thailand frigate PRASAE went aground on the enemy held coast and her boat rescued men from the churning breakers.

To a large majority of Navy men at sea, anyone who can consider a DMS in a class with "luxury liners" by any stretch of the imagination must really have rough duty. Still, this is true of the men who ride the wooden-hulled, 136-foot AMS (auxiliary minesweeper) type ships. By far the most numerous of the minesweepers in the Pacific mine command, these rugged little ships, slightly bigger than a

FLEET MINESWEEPER . . . the USS INCREDIBLE (AM 249) has lived up to her name. The survivor of a three ship minesweeping formation at Wonsan when her two sister ships exploded mines and sank in a few minutes, the INCREDIBLE returned to the U. S. after over three years in the Far East in August. Black dots on the side of the bridge structure tally the mines swept in Korea.





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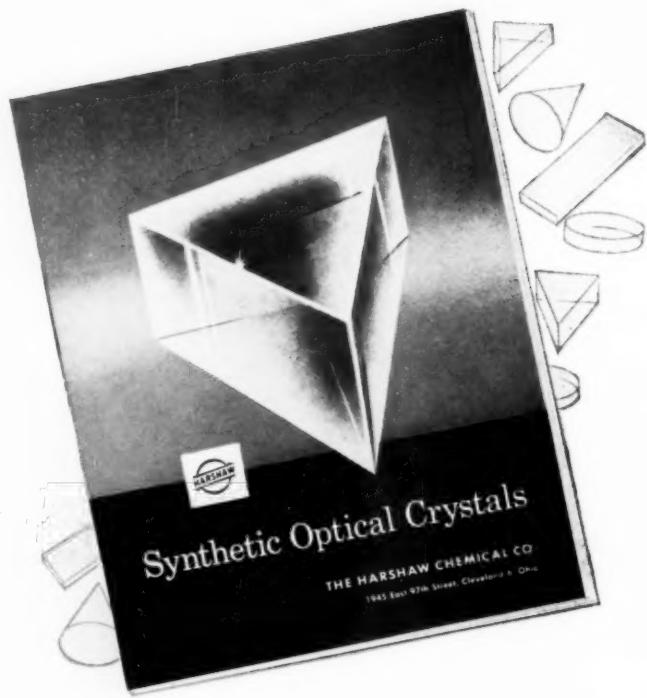
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tuna boat, have proved themselves the workhorses of the fleet.

Among the smallest commissioned ships that fly our flag in Korean waters, these minesweepers have a normal complement of about twenty-nine men and four officers. Their "heavy" armament consists of a forty millimeter mount and several twenty millimeters. With these guns, they have often returned enemy shore battery fire. More often the guns are used to sink or explode mines swept by other ships in the sweep formation.

Most of the AMS's that are still sweeping Korea's coastal shelf and ports were in the Far East working with the 180' AM's in post war clearance of Japanese harbors. A few others have joined them since the start of the Korean fighting from west coast U.S. training groups and the reserve fleet. Employed as the backbone of every sweeping operation in Korean waters, the AMS ships generally get up to ten days in port for repairs and upkeep for every forty they spend sweeping.

Although not considered in the hazardous duty category for pay purposes, the long periods of daily work in dangerous enemy-mined waters under constant threat of being blown to bits at any moment without warning, subjects the crews of the tiny vessels to the same combat fatigue that affects airmen and submariners after a long war patrol.

It is unusual for the sweepers to continue operations after nightfall, but their duties during darkness often include patrols inshore off enemy held land to prevent the remining of channels and previously swept areas by intercepting the small enemy craft that slip out under cover of heavy weather and fog to plant a few more mines.

Life on the AMS's is simple and rugged. In even moderate seas the small ships buck and pitch, making it difficult to do more than keep the ship operating. Streaming and recovering their sweep gear on the heaving decks takes strength and stamina. Capacity for provisions, fresh water, ammunition and fuel is limited so that the ships need close support in the operating areas for frequent replenishment. During bad weather sometimes lasting days, the cook finds that coffee and sandwiches are the staples for any and every meal consumed. As on the larger AM and DMS types, all men are required to remain topside with helmet and life-jacket on for safety against a mine explosion during the twelve or more hours of sweeping. In winter weather with cramped deck space, this keeps the crew physically uncomfortable. The never-ending waiting, wondering if their ship will hit a mine without warning, hour after hour and day after day, keeps them mentally uncomfortable.

In their infrequent stays in port between sweeping assignments, there is a constant round of work. Maintenance and upkeep repairs, cleaning the precious evaporators which at sea give each man a small ration of fresh water for drinking and washing, renewal of scarce spare sweep gear, and setting foot on land again; these things consume the short hours away from Korea's coastal dangers.

The officers and men that man the Navy's minesweepers in combat are strong young men who display the highest kind of team spirit, morale and aggressive leadership. The officers develop in mature command attributes far beyond the average for their age. Responsibility for the safe movements of a bombardment ship (for the Missouri, world's largest battleship), in the hands of a lieutenant (junior grade) commanding an AMS, by virtue of his decision that a certain area is mine-free, requires the finest judgment.

Knowledge of the importance of their essential work (although often unrecognized by their own and other services) has developed in the minesweepers a confidence which is reflected in the high standards of their little ships. "Where the Fleet Goes, We've Been," is the motto they carry to every port and Officers Club in the Far East. And when the X Corps and marines were landed at Wonsan through chan-

nels cut in one of modern history's most intensive minefields, they were welcomed on the beach with the sign, "This Beach Is All Yours Through the Courtesy of Mine Squadron Three." It has been estimated that the communists planted between three and four thousand mines at Wonsan.

This Wonsan operation caught military planners with their eyes closed to the unpublicized facts of mine warfare. It is a basic fact that any small maritime nation, even with relatively backward transportation facilities, little technical experience in the modern sense and a minimum of equipment and improvisation can at small cost deny the use of its landing areas to a large and modern naval force. How long this denial can endure depends on the quality and quantity of the attackers' mine force on the scene.

At Wonsan the magnitude of the problem facing our small minesweeping force set the landing forces back three weeks in their timetable. For future reference it

should be well noted that although mine warfare has become increasingly complex and mines developed that are infinitely harder to sweep, only elementary mines have been used by the North Koreans thus far in the war.

Minesweepers began their work at Wonsan last October. They have successfully opened the port and are still, nearly a year later, enlarging the swept area in the vicinity and south along the coast. The continuing seige of the port which has lasted more than one hundred and sixty days and nights has been possible only because AMS's and AM's have swept and are always resweeping the adjacent waters.

Eighth Army advances north of Pyongyang in late October were slowed with the onslaught of winter in the

(Continued on Page 46)



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RECENT LITERATURE OF NATIONAL DEFENSE INTEREST

Abstracted in *National Defense Review* (1951), published by the Army Library, Washington 25, D. C.

PRODUCTION ALLOCATION MANUAL, PRODUCTION PLANNING FOR EMERGENCY PROCUREMENT. Washington, 50, 83 pp. (U.S. Munitions Board manual no. 90-1.)

Policies and procedures through which production plans can be developed in the event of an emergency. Part one contains a brief description of the principles embodied in production allocation to provide a general understanding of the program. Part two contains the details of the program for use by both government and company officials. Part three contains appendices of support data, definitions of specialized terms, and copies of statistical forms and tables.

OUR NEW WEAPONS, in Armed Forces Talk, no. 357 (15 Dec 50) 12 pp.

An examination of some new U.S. weapons in the light of both their present capabilities and future possibilities, and an appraisal of the performance of those which have been used in the Korean conflict. Topics treated include atomic, chemical, biological and psychological warfare, new developments in airborne techniques and equipment, amphibious operations, jet and turbo-prop aircraft, rockets and guided missiles, and antitank weapons.

AMMUNITION. West Point, N.Y., 50, 179 pp. (U.S. Military Academy West Point, Dept. of Ordnance) *RESTRICTED*.

Discussion of: small-arms ammunition; artillery ammunition; rockets; bombs for aircraft; and pyrotechnics, grenades, land mines, and demolition charges.

EXPLOSIVES. West Point, N.Y., 50, 71 pp. (U.S. Military Academy West Point, Dept. of Ordnance.)

To teach cadets, as combat unit commanders and staff officers of the future, an appreciation of the fundamentals of conventional ammunition design, manufacture, distribution problems, and technical functioning. Consists of four parts: military explosives; manufacture of explosives; the theory of explosives; and research and development of explosives.

MOTHPROOFING AGENTS, by Francis D. Horigan and Cary R. Sage. Phila., 50, 44 pp. (U.S. Army QM Research and Development Laboratories, bibliographic series no. 15.)

An annotated bibliography, essentially a literature and patent survey of mothproofing agents utilized and developed from 1940 to 1949.

NEEDED: A STRATEGY FOR OIL, by Halford L. Hoskins, in For Aff, v. 29, no. 2 (Jan 51) 229-237.

Three of the most important considerations involved in assuring an adequate supply of petroleum for defense needs are the following: (1) to what extent the oil reserve of the U.S. should be conserved by being supplemented by imports; (2) the oil needs of the countries of Western Europe; and (3) where the needed oil can be obtained and how the

supply can be safeguarded. The prime requisite of any U.S. plan of strategy for world security is to make certain, at all hazards, that the oil fields of the Middle East do not fall into totalitarian hands. It would be a mistake to overlook the fact that the Middle East oil fields are strategically vulnerable. Estimates of oil reserves and oil requirements of the U.S. and allied nations point to the necessity of maintaining good relations with the countries of the Middle East.

HEALTH RESOURCES AND NATIONAL SECURITY, by Norman C. Kiefer, in Mil Surg, v. 106, no. 3 (March 50) 173-177.

More than at any time in its history, the U.S. must pursue means to protect its security in event of an unwanted war. The Health Resources Division of the National Security Resources Board is making plans involving manpower, supplies, and facilities in the following fields: medical and surgical care, public health protection, environmental sanitation, veterinary services, and civil defense health activities. Civilian needs in a future war will be far greater and more strategically important than previously. A tragic shortage in hospital space is the real difficulty encountered in planning as related to health facilities. If this sound planning for the protection and use of health resources should meet with success, it will mark the first time in American history that extensive and workable plans have been prepared in advance in this important field.

DEPT. OF BIOPHYSICS, ARMY MEDICAL SERVICE GRADUATE SCHOOL, by Paul H. Streit, in Army-Navy-Air Force J, v. 88, no. 18 (30 Dec 50) 469 and others.

Account of research on the biological and medical applications of radiation which is expanding at the Army Medical Service Graduate School, Army Medical Center, in line with the growing importance of all phases of atomic medicine. Brief survey of the history, organization, mission and accomplishments of the Department.

THE OAK RIDGE STORY, THE SAGA OF A PEOPLE WHO SHARE IN HISTORY, by George O. Robinson, Jr. Kingsport, Tenn., Southern Publishers, 50, 181 pp.

The story of the construction of the atomic energy installation at Oak Ridge, Tenn. Appendices contain the narrative of the first atomic explosion at Alamogordo, New Mexico; the scientific developments leading to the formation of the Manhattan District and the building of Oak Ridge; and the operation of the first atomic energy pile at the University of Chicago.

PRINCIPLES OF PLANT PROTECTION. Washington, 50, 24 pp. (U.S. Department of Defense, Munitions Board, Industrial Security Div., Office of Manpower.)

Provides a uniform guide to plant protection measures for use by management of vital war industries and the Army, Navy, and Air Force. Discusses: problems of plant

(Continued on Page 52)



BUSINESSMAN'S-EYE-VIEW OF THE PROCUREMENT OFFICER . . .

By L. A. Brand, Vice President
Empire Stove Company

Right at the beginning I should like to emphasize that I am fully aware of the tremendous task facing the Procurement Divisions of the Armed Services. It is a gigantic task, and one that no private industry would dare undertake.

I also would like to emphasize that I am not criticizing, but that I am attempting to give you the other side of the picture.

So that we might have some basis for this discussion, let us view with a reasonable amount of accuracy the problem of a potential contractor for war materials.

In an emergency, most manufacturers are faced with the problem of either getting orders to produce war materials or shutting down their plants because materials are not or will not be available to continue civilian production. Strange as it may seem to you, the average owner or manager of a business in such an emergency is not too concerned about his own welfare, nor too much concerned about closing his plant. He is, however, deeply concerned about the welfare of his employees and their families. He is vitally concerned about the welfare of his country. I dare say that the average business executive, way down deep in his heart, is extremely sad he cannot, because of age or physical handicap, wear the uniform you gentlemen are privileged to wear. His only method for striking back at an enemy is to produce quickly and efficiently, the weapons of war you gentlemen need. I mention this because I want to impress upon you that the average potential contractor is conscientious and honest and desirous of doing a good job at the cheapest possible price.

So what does this prospective contractor do? He has read all the information emanating from Washington advising him not to come to Washington for a war contract but to contact his local procurement authority. No one has gone to the trouble to advise him where the various procurement

The basic purpose for which the Armed Forces Chemical Association was organized was to establish and maintain liaison between the Chemical Corps, former and present personnel of the Corps, and industry. A very good example of the fulfillment of this mission was evidenced at a recent meeting of the 9723 OR TSU stationed in Chicago. Through the cooperation of the Chicago Chapter Mr. L. A. Brand, Vice President of the Empire Stove Company, was persuaded to appear before this group of Organized Reserve Corps Officers to give a very frank presentation of how the procurement officer looks to the businessman. By special invitation of Lt. Colonel F. J. Van Wyk, Commanding Officer of the unit, Colonel Victor C. Searle, Commanding Officer of the Chicago Chemical Procurement District, and the members of his staff also attended this unusual session. This is a clear demonstration of the bringing together of industry, the Corps itself, and former personnel of the Chemical Corps who are currently undergoing training preparatory to potential reentry on active duty.

Mr. Brand not only is exceedingly well qualified to present any subject concerning industrial production but also is especially qualified to speak on his selected subject of how the procurement officer looks to the businessman. Mr. Brand has had over 30 years of marketing and manufacturing experience. Normally he makes an average of 20 to 25 speeches before state and national groups, both civic and industrial, each year. His scope of activity is wide and varied. Currently he is a member of the Board of Directors of the Liquified Petroleum Gas Association. He is also national chairman of the Gas Promotion Committee for that association. Further, he is chairman of the committee of Codes and Regulations for the Gas Appliance Manufacturers Association and is a member of the Advisory Board of the Southern Gas Association.

During World War I Mr. Brand served as an officer and saw combat experience overseas.

During the present limited national emergency Mr. Brand has guided the thinking and constructive action taken by his firm in the effort to secure defense contracts. This activity has necessitated his visiting many procurement officers for the different services not only in the Chicago area but also in Washington, D. C., and in other parts of the country. He has experienced all of the usual difficulties the businessman undergoes in his dealings with procurement agencies. His talk before the augmentation unit was based upon his industrial procurement experiences during World War II and the present emergency.

agencies are located. After several days of trying to obtain this information locally, he decides maybe he'd better take a trip to Washington to see what it is all about.

When arriving in Washington the logical place for him to go is the Pentagon Building, the nerve center of all Armed Services activities, and gentlemen, you have heard the story about the battle of the Pentagon, but I doubt that any of you have ever tried to fight it as a civilian.

When arriving at the Pentagon Building, this prospective contractor's troubles really begin. After one-half hour trying to find the proper entrance to the building, he enters, spends another half hour or hour finding some place from which to obtain information. (By this time he has walked five miles.) He is met by a none-too-courteous and none-too-smart minor clerk who half-way listens to his story and then says, "Oh, you want to talk to Central Service Procurement Information. Now let us see, they are in corridors B, C, D and G, Bay-11, 472. Here is a map for you to find the way." Another hour is spent finding the proper office. By this time the guy is tired and sweaty. (The Pentagon Building is a hot place, winter or summer.) And he is perfectly willing to sit and wait the hour and a half required before being admitted for an interview. Finally, after he has cooled off, the reception clerk announces that he may see Captain So-and-So, or Lieutenant So-and-So. He thinks, "Well, now I am getting some place. At last I have the name of someone in authority." But imagine his consternation when he is ushered into an office in which six or eight Wac Captains are sitting and about the same number of Wave Lieutenants. Not a man in the room. He has three strikes against him before he starts. He is directed to take a chair in front of one of the Waes who has a standard cold phrase, "What can I do for you?" He looks into her eyes and sees an iceberg from the North Pole. But he concludes, "Well, I have come

this far and nothing can be lost by trying." He tells his story, seeking for information as to how he should proceed to obtain a war contract. Very coldly he is told he is in the wrong place. "You must contact your local procurement offices. Here is a list of them." He asks for the names of the Commanding Officers so that he at last may have someone in authority to ask for when visiting the district procurement offices, but is told that such information is not available. The interview is then ended very courteously by the War Captain who tells him that she is sorry she has someone else waiting to be interviewed. At least this prospective contractor had accomplished one thing from his efforts, he knows now where to go to obtain a war contract.

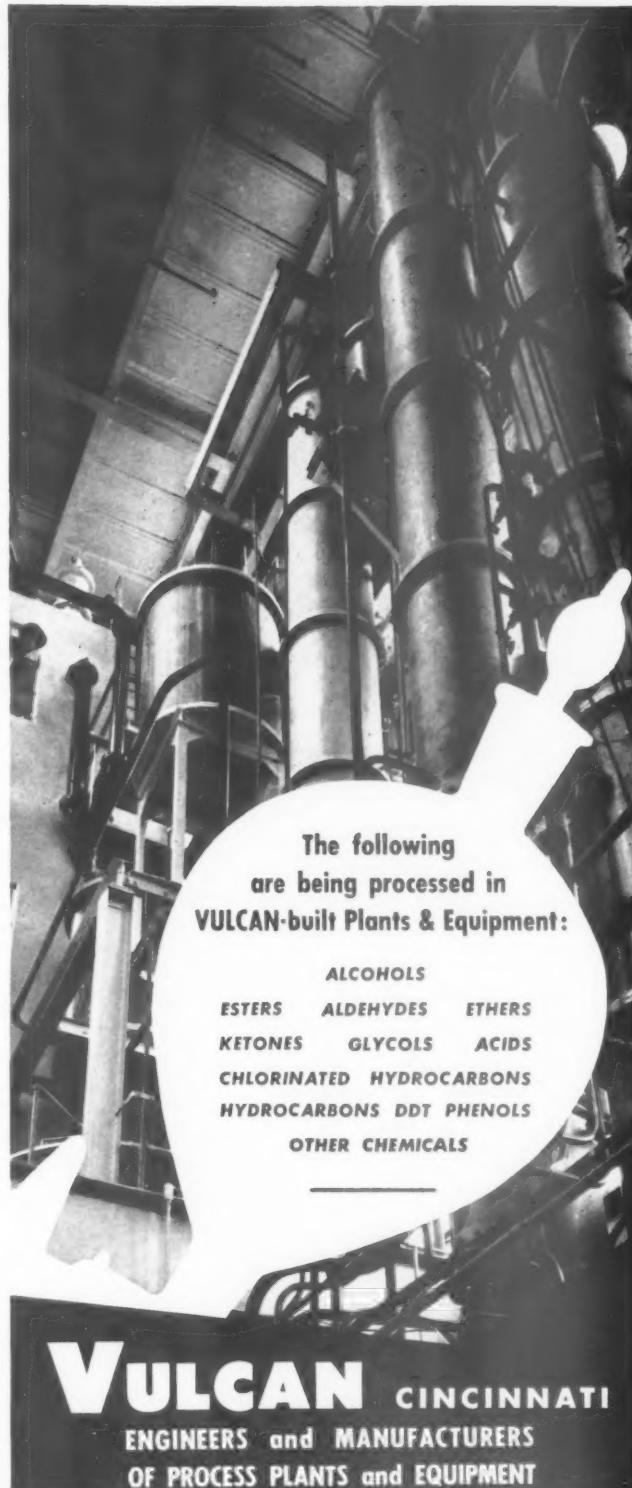
He returns to his hotel room, sits down to rest, and begins to think, and this is what goes through his mind: "Maybe I didn't do so bad today. I'll rush back home and really go to work on these district procurement agencies." But then, all at once, he says, "Wait a minute. We have been planning with such and such an agency for five years. I believe it was called War Mobilization Planning. Why shouldn't I contact that agency and see what they have to offer. After all, I spent my time and the time of my engineering force to assist in War Mobilization Planning, and surely some consideration will be given to plants who have been cooperating and designated as potential suppliers to these various agencies." He sleeps well that night because he is quite sure he has all the answers.

Next morning he arises early, takes the first airplane back home. That afternoon he begins visiting the procurement agencies in his area. The first he calls upon is the one with which he had done War Mobilization Planning. He is very courteously received, is turned over to an engineer, tells his story and then is told that so far there are no requirements that might use his facilities. He experiences the same treatment with all other procurement agencies, and then after about a week or two of hard work contacting the various agencies attempting to sell his facilities for war work, decides that maybe he has lost his grip, and that he doesn't know how to sell himself, his services and his plant. By this time, however, he is becoming desperate. Something has to be done to keep his plant operating. If he doesn't get a war contract he can visualize a complete shut-down and terrific hardships for his employees.

He then decides that maybe he'd better return to Washington and attempt to contact someone in authority in each branch of the Armed Services represented by the various procurement districts. This he does, and finds after several days of hard work and contacts that requirements are going to be passed down to the procurement districts for items that he might make or manufacture. He then returns home and again contacts the procurement agencies and requests that he be permitted to bid on these particular items.

And then this fellow who has had nothing but disappointment is made very happy one day when he opens his mail and finds a letter from the War Department stating "Attached are blueprints and specifications for item so-and-so upon which you are requested to submit your bid to this office by such and such a day." Now he is really going places. He is sure now that he will get a war contract provided, of course, he is the cheapest bidder. Gentlemen, I thought this story might be interesting. It is not exaggerated but is exactly what any prospective contractor might expect when he goes out after a war contract.

Most contractors feel that there is an excessive amount of paper work required before and after a contract is let. In most instances it is necessary for them to employ additional help to take care of this paper work. Since most bids for war materials are on an estimated basis because the average contractor has not had previous experience in manufacturing that particular item, they, the contractors, feel a definite need for price redetermination and price renegotiation. However, they also feel that too much emphasis



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sis is placed upon price at the time the contract is let and that more consideration should be given to the ability of the facilities to perform satisfactorily and on time. They feel that any excessive price will be automatically adjusted at the time of price redetermination or price renegotiation.

The contractors recognize the personnel problems confronting a procurement office, but they still feel the need for a better trained procurement personnel so that information concerning the use of their facilities is more readily available and that after receiving a contract information concerning contract procedure and production requirements is quickly available.

We have gone through two wars as a contractor for war materials. Great strides have been made toward furnishing, better and more quickly, accurate information since World War II. Procurement of today is on a more business-like basis, but there is still much room for improvement. Many of the faults found today in procurement offices are not because of procedure, plan or laxity on the part of the Commanding Officer but are because of the personalities and the laxity of some officers or civilian employees connected with the procurement districts. Often statements are made that are not conducive to good business and which in all probability would not be sanctioned by those in authority. To illustrate the point—frequently contractors not familiar with procurement and inspection procedures are told by some individual in the procurement office that it is satisfactory to produce an item slightly different from that specified. He proceeds, and then finds, much to his dismay, that inspection refuses to accept because the changes had not been cleared by a waiver or an alternate. Bear in mind that not all manufacturers are familiar with your routine. Spend a little time educating them and you will save them and yourself many a headache.

Keep in mind as officers who will no doubt soon be on active duty, that you will probably be assigned a task of operating a division or a department of a procurement agency. Learn your job in that division or department well. Run your own division well and efficiently. Do not usurp the prerogatives of another division head. Cooperate with other division heads. Make no move in your own division without first considering the effect upon other divisions. Consult with other division heads openly and above board so that your entire procurement district operates as a unit. This will gain for you and your district the respect of the businessman. Remember, any apparent inefficiency in your district irks the hell out of a businessman because he feels that it is his tax money that you are spending and that even though you may not think so, he is actually paying your salary.

Do not be disturbed at what apparently seems stupidity on the part of your superior officers. Remember that many acts they commit with which you do not agree are because of changes of policy or on orders from top side. Time, and often regulations, will not permit a complete explanation as to the reasons for changes to all those connected with this district. Make recommendations concerning your division. Do not feel bad if they are not accepted. Someone at the top may have a good reason for not doing so. He has the overall picture you will not have unless you are actually sitting in his chair. Above all things do not fail to exert yourself when you are convinced you are right. Any superior officer will respect you for this. Be sure you have the facts and be sure what you recommend is for the benefit of the district as a whole and not to benefit you personally. The only man right all the time is the Good Lord Himself. Any superior officer you may have, if he is worthy of his position, will lend an open ear to constructive, intelligently, diplomatically presented criticism.

Never make the mistake by feeling that your contractor does not know what is going on. Give him credit for being a business man. Remember he keeps his ear to the ground



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and he can probably tell you almost as much about your district as you know yourself. His failure to do so would brand him an unworthy contractor not entitled to the consideration of working with you.

There seems to be a tendency by procurement officers to feel, once a facility has been awarded a contract, that they should not be considered for additional contracts until they finish the one upon which they are working. This, gentlemen, is wrong. It is not good business and the continuing of this thinking will result in terrific losses to our Government. Let me explain, but first let me preface my explanation by saying that we agree with the thinking that more than one facility should be established to produce expendable items purchased in large quantities and upon which there is a possibility of a continued large quantity requirement. We cannot agree though, with the thinking so many facilities be established that no one contractor gets a contract sufficient to keep his plant operating on a profitable basis and that all the contractors get a contract insufficient to keep their plants operating profitably and one that permits them to operate only a small percentage of the time.

To do so means that our Government is expending large sums of money unnecessarily for tooling. It also means that contractors are forced into frequent short-period shutdowns resulting in loss of skilled mechanics and requiring the training of new help. Production drops, costs rise, poor workmanship develops, and the chances of our Government recovering money from price redetermination and price renegotiation is lessened.

What is the solution to this problem? There are only two possible avenues to pursue. One is for the contractor to look for additional war work from other procurement agencies, thereby closing the door for added production for your district even though he might be tooled and have the capacity

to produce three to four times the quantity you originally required. Two, the procurement agency can keep in close contact with the contractor and give him an opportunity to bid on fill-in contracts to keep his plant operating near capacity.

No sane businessman is going to sit tightly by until a contract is finished before he starts looking for another. If he cannot get business from your agency, then he will get it from another, thereby closing the doors for your district.

On this score let us keep in mind that tools, dies, jigs and fixtures developed for one facility seldom are applicable for use by some other facility. Dies are usually made for a particular kind or style press. Tools and jigs and fixtures are made for a particular manufacturer's production and assembly line. They cannot, as a rule, be used by another

(Continued on Page 36)

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MILITARY PACKAGING PROBLEMS

By Walter Epstein, Pres.
Package Consultants, Inc.

Military packaging, as we know it today has made great strides in a short period of time since the early days of World War II. As former Chief Packaging Engineer for the New York Chemical Warfare Procurement District, the writer experienced many packaging problems which arose from the contracts awarded in that district. To better understand the problems germane to military packaging, one must be thoroughly familiar with standard military packaging procedures. The importance of specialized military packaging is greater for export shipments than for domestic destinations.

The science of proper export packaging is simply the transfer of the correct quantity of arms and war materiel with dispatch to their ultimate destination, safely and in usable condition. Obviously, it is sheer waste to consume valuable man-hours of vital labor, fabricate critical metals and other basic materials and expend our nation's industrial facilities, only to discard the finished product at its destination because it is rusted, corroded, spoiled, damaged or broken due to carelessness in processing or packaging, or improper, inadequate packaging. In addition to being costly, a delay caused by unuseable materiel may even seriously hamper a military operation during time of war or endanger life and limb. These facts hold true regardless whether for Chemical Corps supplies and equipment such as flame-throwers, fire bombs, decontaminating units, or any supplies for the other branches of the Army, Navy or Air Corps.

The fabrication of almost all war materiel and equipment must meet strict compliance with the numerous detailed drawings and specifications designed for that particular materiel. In fact, in most instances, the tolerances may usually be within a few thousandths of an inch. However, in diametric opposition is the packaging and packing of these materiel and equipment since most packaging specifications are very general. Because of this general nature, packaging problems are created.

Of great importance is the selection of the proper specification to be applied to the product to be packaged. Whereas, in days gone by it was the practice of the Government agencies to ask for "packing which shall be acceptable to common carrier," Government bids and awards now state the specifications applicable to the contract and, in some instances, state additional details of packaging. Because of the general nature of the specifications, it has been found that merely citing specification numbers is not entirely satisfactory especially when the materiel being procured is complex, assorted or detailed.

When packaging first became recognized as an important military problem in the early days of the war, an overall specification, 100-14A was compiled by packaging experts in all fields of related endeavor. A Packaging School at

Forest Products Laboratory in the University of Wisconsin taught and educated key men in all branches of the Army, Navy and Air Forces as to the proper use and application of 100-14A.

As time went on, however, it became quite apparent that this single overall specification attempted to cover too much ground and, as a result, there were developed the series of Joint Army-Navy specifications, known as Jan specs.

Each sub-heading in 100-14A was broken down to its components starting from JAN-P-100, "General Specification for Packaging and Packing for Overseas Shipment" and continuing with separate specifications for the many types of crates, plywood, nailed wood and wirebound boxes, V and W board cartons, bags, barrels, waterproof and grease-proof papers and covering just about every phase of packaging and packing. In fact, many of the JAN specs are being superseded or augmented by Military MIL specs. All these specifications help the Government state exactly what is considered good packaging. Yet, with all this information available to the contractor, difficulty is still experienced since, as mentioned before, these specifications are general in nature.

In any consideration of packaging, several important factors must be included:

1. Corrosion prevention and protection of all metal parts and surfaces and full protection for any part or equipment subject to rust, rot, corrosion, damage or breakage.

As a general rule, all metal parts and materials must be protected by painting, plating or corrosion preventive compound in order to maintain their usability in the field of action. To accomplish this work, JAN-P-116A, "Methods of Preservation" was formulated along with other related specifications. These specs fully describe fourteen methods of cleaning metal parts as all critical surfaces must be free of dirt, contamination or fingerprints. After this operation, the part is treated with any one or combination of twelve different corrosion preventive compounds. After cleaning and treating, the part is then repackaged in any one or combination of wrapping or envelopes designed to the oil or grease on the treated part and keep out moisture, water or other agents which may be destructive to the part. This may be further protected by heat-sealing the package or dipping the wrapped package in microcrystalline wax. Fragile parts and delicate assemblies must be cushioned with approved cushioning agents such as shredded grease-proof paper, cellulose wadding, corrugated paper, mineral wool, excelsior or other such cushioning materials.

Other parts such as electrical motors or assemblies which cannot be treated with oils or greases are protected against corrosion by means of a Method II pack. This essentially consists of enclosing the part in a moisture-vapor-waterproof barrier. A drying agent, such as silica gel or its equiv-

alent is included in the pack to absorb the moisture in the air trapped in the hermetically sealed barrier package.

Each part or assembly must be fully and adequately marked or identified with the Government stock number, nomenclature and quantity per package. Some branches of the Services also require contract and requisition numbers on the package.

2. Sturdy, light, strong shipping containers.

The shipping containers may be constructed of lumber, plywood or fibreboard. The fibreboard must consist of V board to be permitted for export use as this board will withstand all kinds of weather. The lumber or plywood will vary in thickness depending on the type of load, weight being shipped, size and many other such factors. Actually, the study of wood shipping containers is a science in itself and such data as species and grades of lumber, moisture content, thickness of lumber, size, type and spacing of nails and guiding factors are all important in determining the size and type of box safe for the transportation of the materiel. In general the three types of shipping containers most widely used in military packaging are cleated plywood boxes, nailed wood boxes and wirebound boxes. Each of these types of containers has certain advantages and disadvantages but the most popular of the three is the nailed wood box.

3. Blocking and bracing within the shipping container.

After the parts are packed within the exterior shipping container, they are cushioned, if necessary against shock in transit. If there is any looseness of the packaged parts within the container, the parts must be securely blocked and braced to obtain the minimum of movement, thereby protecting against breakage or damage to the parts or the shipping container itself.

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4. Proper strapping and full adequate marking.

The appendix of each box specification contains complete details as to the proper strapping to be used, number and thickness of bands or wire to be applied and other such information. Finally, the container is ready for full and adequate markings in accordance with applicable drawings or Specification 100-2E. This information must show consignee, consignor, contract number, contractor's name, stock number, nomenclature, date packed, weight cube and the Government inspection marking.

As has been previously pointed out, the specifications in themselves are quite complete as written. The real problem arises in the specific application of those specs to the particular item to be packed.

It must be remembered that the average bidder or contractor who has been awarded a contract will begin to purchase his packaging materials without being fully familiar with the important points outlined above. Although he is completely cognizant of, and thoroughly versed in the method of manufacture of the contracted part or assembly, he is thrown into a maelstrom of packaging, packing and marking specifications and drawings which, in many instances appear to be more complicated than the part the manufacturer is to produce. This is especially true when there are several parts or assembly sets to be fabricated or supplied. The average contractor may not intimately know the important facts about the specifications cited and may interpret them to the best of his understanding. Because of this, the final packaging, while it may meet the specs, nevertheless falls far short of desirable packaging for the item to be packaged.

Also, a contractor may be placed at a distinct disadvantage if instructed to follow a specific packaging procedure after the contract has been awarded. This may be due to price differentials of the various methods of packaging, the availability of packaging materials specified and many other such reasons. A condition of unfair competitive bidding may develop where several bidders may enter their bids for the manufacture of a part and each contractor interprets the packaging specs in his own judgment.

As a practical matter, it would be helpful to everyone concerned if each proposed procurement were to outline the exact method of packaging required for the item being procured. The proposed packaging in the invitation to bid should be thoroughly discussed and determined by a representative of the Packaging Branch of the District handling the bid together with an expert in the military packaging field. This proposed liaison between the Government and the Packaging Industry would result in the following:

1. Better packaging and packing of Armed Services supplies, yet more economical. It will also help the Inspection Division accept or reject intelligently.

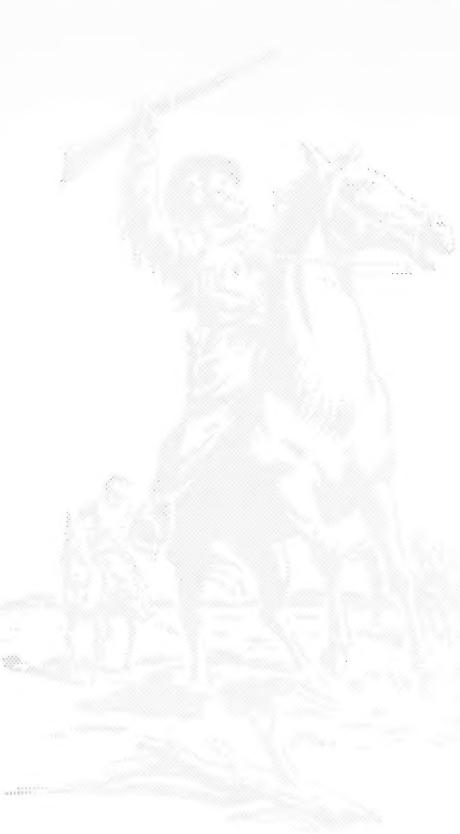
2. Proper application of those portions of the packaging specifications directly affecting the proposed procurement.

3. More fair and equitable basis for competitive bidding.

4. Costly delays avoided due to lack of packaging knowledge after the contract award is made.

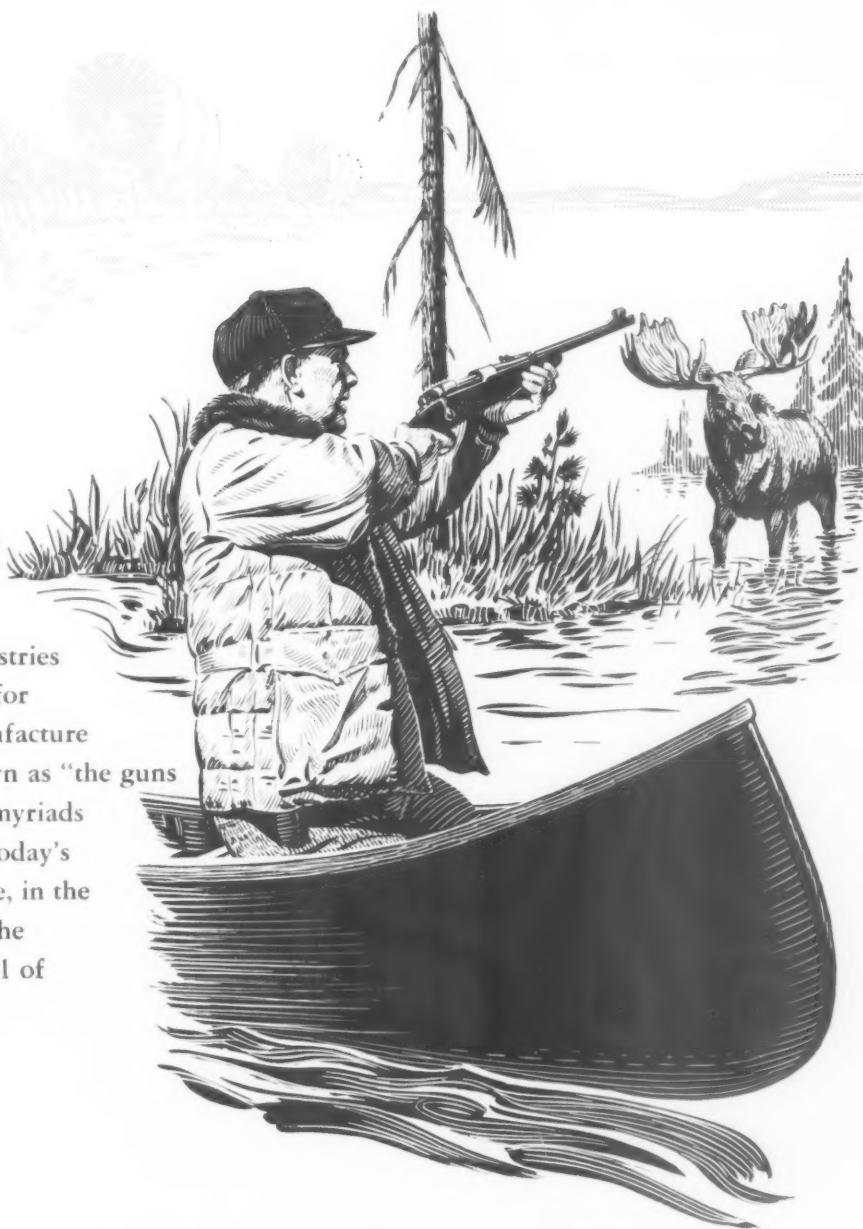
5. Packaging materials specified which are readily available in that part of the country where the award is being made.

It should be noted that the military packaging problems as outlined above are merely a few examples of many in the overall picture and are not solely those of the Chemical Corps but common to all other services. For this reason it is felt that the Chemical Corps can be a guiding light to the other services if this plan of liaison were to be adopted. It may be apropos of the Armed Forces Chemical Association to investigate the entire matter more fully.



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Teamwork is the by-word at the office of the Boston Chemical Procurement District at the Boston Army Base. Since the District's reactivation in 1949, "not a stone has been left unturned" to help promote the defense effort. The skeleton staff of one officer and three civilians, who helped to organize the office, has now multiplied itself to an efficient working team of 14 military and 145 civilian personnel, headed by Colonel William E. R. Sullivan.

TEAMWORK IN NEW ENGLAND

With the Korean incident came an ever increasing load of procurement planning, further increased by the President's declaration of a national emergency. The Boston Chemical Procurement District has been most fortunate in the caliber of personnel it has received, and, as a result, has been able to cope with the increasing demands brought upon it by the national emergency, absorbing the increased load without any appreciable deterrence to progress in the procurement and industrial mobilization program.

A Brief History

The Boston Chemical Procurement District was activated some time in 1922 or 1923, and at that time the Commanding Officer was Lieutenant Alden Waite, later one time Chief of the Chemical Corps. Lieutenant Waite worked out originally from the Ordnance Procurement District, and in 1924 the office of the Boston Chemical Procurement District was at 408 Appraisors Stores, Boston. Later this office was moved to the Chamber of Commerce Building, from there to the U. S. Post Office and Federal Building. The interim between 1922 and World War II found the small office of one officer and three civilians performing only procurement planning functions, actual procurement not beginning until August of 1940 when the first contract was awarded. World War II and its resulting expanding mission for the District, found the unit in new

quarters in the Second National Bank Building, from which location some \$200,000,000 worth of contracts were awarded to New England manufacturers. The Commanding Officers of this District have been Colonel Rufus F. Maddux, Colonel Henry N. Blanchard, Colonel Maurice B. Willett, Colonel Alley, Colonel John A. Baird, and at the outbreak of hostilities of World War II, Colonel Whitesides. The post-war period made it necessary to close the office and transfer its functions to the New York Chemical Procurement District. Proper liaison with New England manufacturers could not continue under this arrangement and it was decided to again reopen the office in May of 1949. Initially, all procurement planning was accomplished under the supervision of the New York Chemical Procurement District, with Lt. Colonel Joseph F. Escude acting as Commanding Officer for both Districts. With the assignment of Colonel (then Lt. Colonel) William E. R. Sullivan, Major Henry A. Kitselman, Jr. in July, 1949, and later, Major (then Captain) Forrest O. Wells, the complement of officers necessary to establish the office in Boston, was complete and independent operation of this District was begun. At approximately this time, the first complement of civilian personnel arrived in this office. Included among the first civilian employees were: Mrs. Ellen Gaynor Row, Mrs. Mary R. Donnell, Miss Helen G. O'Brien, Miss Margaret M. Daly, Mr. Paul E. Reynolds,

Mr. Millard A. Merryman, and Mr. Morris L. Budnick.

During this initial period of activation, little time was lost in transferring, from New York to Boston, scheduled planning requirements, drawings, specifications and other data. Procurement planning proceeded as rapidly as the necessary materials were received, and a continuity of planning was effected.

Activities Since Activation

In the two years of operation since its reactivation, the Boston Chemical Procurement District has implemented plans to bolster the Chemical Corps Industrial Mobilization and Procurement Planning Program, in its many activities in the States of Maine, New Hampshire, Vermont, Massachusetts, Connecticut and Rhode Island.

Procurement and Procurement Planning

The Boston Chemical Procurement District is responsible for the procurement of all chemical protective equipment, as well as certain chemicals, assigned to the Chemical Corps, used by the Army, Navy and Air Force. Procurement planning has been completed on most of the schedules placed with the Boston Chemical Procurement District. By December 1950, current procurement had resulted in some \$11,976,449.54 worth of contracts awarded to firms in the New England Area, of which \$4,921,757.48 was awarded to concerns employing more than 500 peo-

(Continued on Page 50)

Colonel William E. Sullivan (right), commanding officer of the Boston Chemical Procurement District, pins the eagles denoting colonel rank on Colonel Dominick Chiminiello, while Lt. Col. Eugene C. Branca looks on. Colonel Chiminiello received his promotion shortly after coming on active duty earlier this year.

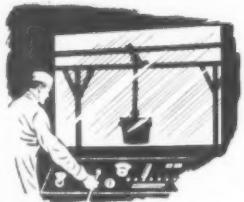


GAS MASKS—Government inspectors on assembly line checking completed facepiece. March 1951 Boston Chemical Procurement District Photo.





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SMALL BUSINESS ORIENTATION

A Small Business Orientation Conference of the Fourth Army Area, under the auspices of Headquarters Fourth Army and Office, Chief Chemical Officer, was held in the Community Room of the Texas Bank and Trust Building, Dallas, Texas, on 20 and 21 August 1951.

Attending the Conference as participants and observers were representatives from the: Department of Defense; Department of the Army, Fourth Army; Technical Services (including Ordnance, Engineer, Quartermaster, Chemical Corps, Transportation Corps, and Medical); Armed Forces Special Weapons Project; Department of the Navy, Dallas, Texas; U. S. Department of Labor, Dallas, Texas; U. S. Department of Commerce-NPA, Dallas, Texas; General Services Administration, Dallas, Texas; Armed Forces Regional Council; Southern Air Force Procurement Field Office, Fort Worth, Texas; Texas Employment Commission, Austin, Texas; Governor's Commission on Small Business for Oklahoma; and the Governor's Small Business Committee for Arkansas.

Lt. Colonel Joseph J. Imhoff, G-4 Section, Headquarters Fourth Army, presided over the meeting, and was assisted by a Board comprised of Lt. Colonel B. C. Preacher, Office, ACofS, G-4, Washington; Lt. Colonel V. J. Kosebutzki, Office, Chief Chemical Officer, and Mr. Leonard C. Etheredge of the Munitions Board, Washington. Colonel G. W. Dorn, Commanding Officer of the Dallas Chemical Procurement District, presented the welcoming address to the conference members.

The program for the two-day Conference included: remarks by Colonel H. P. Adams, Office of Assistant Chief of Staff, G-4, Fourth Army, subject: "Importance of Utilizing All Segments of American Industry"; a message from Lt. General Leroy Lutes, Commanding General, Fourth Army, who was unable to attend because of other commitments; remarks by Mr. Leonard C. Etheredge, Munitions Board, Department of Defense, regarding "The Government's Small Business Program," and general remarks by Lt. Colonel Preacher and Lt. Colonel Kosebutzki.

According to information disseminated during the Conference, the role of the Small Business Specialist currently operating on a part-time basis may soon be changed to a full-time duty, and is to be considered of primary importance in the defense picture.

Dallas Chemical Procurement District conferred with the Fourth Army Assistant Chief of Staff, G-4, and with the Small Business Specialist, OCCm10, in the initial planning. Arrangements for the use of the facilities of the Community Room and the Downtown Club at the Texas Bank and Trust Building were made by DCPD, which also furnished personnel to assist in registering representatives, answering inquiries, making hotel and plane reservations, and writing up the proceedings of the meetings.

Attending the Conference from Dallas Chemical Procurement District were: Colonel G. W. Dorn, Commanding Officer; Major Hugh C. Ryan, Procurement Officer recently appointed as Small Business Specialist; Mr. John L. Eddy, Engineer; Mrs. Mae Brooks, Secretary; and Mrs. Virginia Bates, Receptionist.

BUSINESS-MAN'S-EYE-VIEW

(Continued from Page 30)

manufacturer. This means that if you lose this contract you might be forced to spend money for a complete new set of tools for a new contract.

There is one other point I would like to make, gentlemen, and this is the observation of a fellow who has been working very closely for ten years with the Army. "Wear that uniform proudly, but don't let it go to your head." Some persons feel when they put on a uniform that the need for being courteous and amicable no longer exists. They become curt, domineering and difficult to meet. Perhaps it is because they feel they have the entire United States behind them and that they can revert back to the natural human inclination to be selfish and tell everyone to go to hell.

Remember, regardless of your rank you once held the rank below you. Remember you were once a civilian. Remember you will be a civilian again even though you stay in a uniform until retirement. Put yourself in the other guy's position, and then give yourself the kind of treatment you would want. Don't feel when a contractor comes in and shakes your hand that he has his other hand in your pocket. Do feel that he is honestly wanting to know you so that he can do a better job for you.

Let me conclude by saying that it is not only difficult to obtain a contract as outlined before, but it is just as difficult to perform once the contract has been secured. You require volumes of information far beyond that needed for normal conduct of a contractor's business. Regulations require that you delve into the contractor's business and books far beyond the point he would permit anyone else to go. It even gets to the point at times your contractors feel they are being brow-beaten and are inclined to tell you to take the contract and go to hades.

Those of you charged with this particular phase of procurement should be as diplomatic as possible. Approach the contractor with the feeling that what you are doing is mutually beneficial rather than with the feeling that a contractor is a crook and that you must out-smart him. Be patient. Request, recommend and ask for assistance in performing your duties. Do not be demanding.

Many contractors are not familiar with your forms. Many forms submitted are not understandable to anyone other than those who prepared them, and as a rule, too little information is furnished for the contractors to complete these forms as you desire. Make your requirements more specific. Give some thought to the problem that the other fellow has no idea of what you want. Help yourself by helping your contractor. Your job will be easier, the contractor's job will be easier, you will get production quicker, your schedules will be met, and everyone will be happier.

I hope I have given you some constructive ideas. I hope you will take the criticisms in the spirit in which they were made. Namely, an earnest desire to be helpful. I have done all the kicking tonight. I hope you will very soon give me the opportunity to hear what procurement officers have to say about the contractor.

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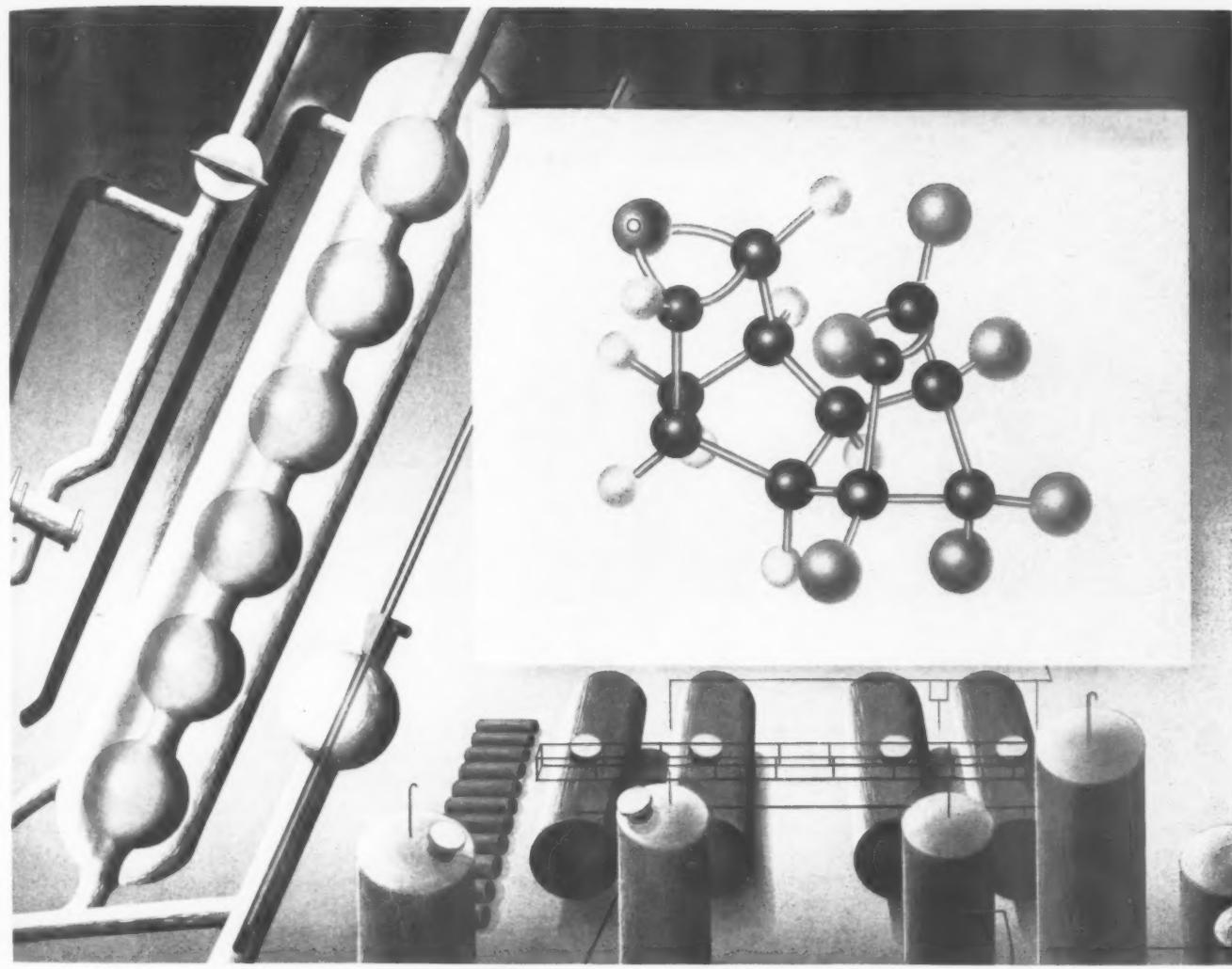
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Georgia School of Technology, Atlanta, Ga.

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*See Armed Forces Chemical Journal, IV, (3), 29, (1951)

92nd CHEMICAL MORTAR B



By LT. COL. RONALD L. MARTIN, CML. C.*



Covered by fire from this 4.2 chemical mortar crew (firing white phosphorus shells) elements of an Infantry Regiment move into a new position.

The U. S. Army did not display much interest in the heavy 4.2-inch mortar for general wide-spread use until mid 1943, although most foreign armies, particularly the Germans, had already made successful use of this type of weapon. During the Sicilian campaign of 1943 the 4.2-inch chemical mortar made its first appearance in combat and was not long in winning recognition. Because of the successful record of the weapon in Sicily and Southern Italy chemical mortar battalions were in demand for the Normandy invasion. It was known, however, that only three of those in the ETO troop basis would be available. Only two trained battalions were present in England and but one other trained battalion was scheduled to arrive there prior to D-day. It was, therefore, decided to activate at least one additional battalion in England.

Accordingly, the 92nd Chemical Mortar Battalion was activated at Brockley, Somerset, England, just south of Bristol, under the supervision of the First Army. Officers and enlisted men started joining the battalion late in February and by mid-March about 80 percent of authorized strength was present. The officers and men for the battalion came from units already in England, and very little attention was given to their prior training and abilities. About one-half of the original officers were of the CWS, but very few of these had any knowledge of the mortar. The other officers were from six different branches of the service and none had even seen a 4.2-inch mortar. Fortunately, a few of these officers were from the Field Artillery and knew artillery fire techniques; a few others were from the Infantry where they had gained some knowledge of the employment of the 81-mm. mortar.

From the start, the 92nd Battalion faced a serious personnel problem. The initial group of about 400 enlisted men came from another chemical mortar battalion in England whose authorized strength had been reduced from about one thousand to less than 600 enlisted men. Considerably over one-half of this group was in the two lowest AGCT classes, four and five. Consequently, capable noncommissioned officer material for the battalion was

lacking. During March the 92nd spent considerably more time in getting rid of about 100 of these misfits than in training. The remaining enlisted men made good soldiers, won their share of combat decorations and two received battlefield commissions.

The battalion was unable to reach its authorized strength of both officers and enlisted men until long after entry into combat. Even then casualties consistently kept the actual strength far below authorized strength.

The approved organization for a chemical mortar battalion provided four mortar companies of twelve mortars each. Realizing that this organization was not possible with the available personnel, the CO of the 92nd requested and received authority to organize the unit similarly to a light Field Artillery battalion, with three mortar companies and augmented communication and ammunition sections. The advantages of this type of organization were demonstrated later when other mortar battalions were reorganized similarly, and still later when the approved War Department organization chart was changed to prescribe a similar type of organization.

The 92nd experienced great difficulty in obtaining authorized equipment and training aids. Usually, organizations were sent to the theater of operations with their training completed and in possession of their authorized equipment. The supply plans of the Theater did not provide for the equipment to activate, nor the aids to permit training a new battalion. Consequently, the battalion spent many man-days in collecting motor vehicles, weapons and other authorized equipment from all over England, and many more man-days in devising and making training aids.

The officers of the new battalion attended classes four and five nights each week in order to become familiar with the lessons which they taught the next day. This procedure helped the officers, but the noncommissioned officers suffered because they received most of their instruction and training at the same time as the other enlisted men. There was just not enough time to give specialized and advanced training to the noncommissioned officers. Only a few of the noncommissioned officers, the ones who had received training in motor transport and communications prior to joining the battalion, were sufficiently well-

* Lt. Col. Martin was commanding officer of the 92nd Chemical Mortar Bn., between 3 March, 1944 and 4 August, 1945. He is now the Assistant for Business Management to the Commanding General, Army Chemical Center, Maryland.

BATTALION HISTORY



Mortarmen from a Chemical battalion setting up 4-2 inch chemical mortar near town of Kaslar, Germany. (92d Cml. Bn.)



A 4.2 mortar is throwing smoke shells to cover the crossing of 5th Division troops over the Sauer River at Ballendorf, Germany. Company B, 5th Inf. Div., near Ballendorf, Germany.

trained that they could relieve the officers of part of their big training job.

By mid-May the battalion had undergone sufficient training that it was capable of making a fairly decent road march and each company was able to impact its twelve mortars in the general vicinity of a large target, if they were not rushed. At about this time a persistent rumor was making the rounds to the effect that the battalion was to go ashore on D-day. No one seemed to know just when this day was to occur but everyone believed that it was to be soon.

Late in May, by what was later learned to be a stroke of good fortune for the battalion, an order was issued attaching the battalion to the Artillery of the XIX Corps. Many of the Artillery officers were old friends and classmates of the battalion commander. After watching the battalion fire a few problems these officers decided that a period of intensive training in the latest techniques of artillery fire control would prove valuable. For fifteen days the battalion, particularly the officers and noncommissioned officers, trained in the proper and simplest methods of massing artillery fires. This period of concentrated instruction proved invaluable later in combat, for the battalion was able to coordinate its operations more closely with the division and corps artillery units than otherwise would have been possible. Of course, the battalion did not always operate in this manner, but the ability to join the wire and radio nets of the supporting artillery, as well as those of the supported infantry, and the ability to use the artillery observers, as well as having the forward observers of the mortar units conduct the fire of the artillery, proved valuable indeed.

D-day arrived and passed, with mixed feelings for the members of the battalion. Some were disappointed that they didn't go ashore in the assault, others were happy that they had a few more days to train. Eventually, the order to proceed to the marshalling area arrived. On 15 June the battalion started moving to the docks at Plymouth. It had been expected that upon arrival in the marshalling area the battalion would be furnished the personnel and equipment that it was short. A briefing of the officers was also expected. Nothing of this sort occurred.

The move across the Channel was made in two groups, each with its own Liberty ship. Although the groups left Plymouth on 18-19 June the landings on the coast of Normandy were not made until 27 June, because of the sudden and now infamous storm which unexpectedly swept the coast of Normandy.

As it was impossible to approach the temporary docks or to unload to lighters the battalion lay a few hundred yards off the coast in its two Liberty ships and "enjoyed" a good ringside seat. Both ships, the one at Omaha Beach and the other at Utah Beach, were bombed by German planes at night and had a good view of the retaliatory fire by friendly AA guns. The wrecking of the temporary docks and many ships, by wind and wave, the unloading of the special ships that moved to the shore and disgorged troops and equipment, the landings on the heights above the beaches by the never-ending trains of C47 transports, and the loud and ominous sounds of war a short distance inland, were very entertaining but everyone realized that the battalion would soon be a part of all this commotion.

On 1 July, less than one hundred training days after activation, the battalion was attached to the 30th Infantry Division to support its crossing of the Vire River. The battalion commander made his first reconnaissance accompanied by only the commanding general of the 30th Division Artillery, who later rose to the command of the XIX Corps. Mortar positions were chosen within a few hundred yards of the infantry MLR, and it was necessary to prepare and occupy the positions at night. Pits were dug for each mortar, a practice which was then considered proper. This policy was soon changed because the mortars began sinking towards China after the first few rounds were fired.

During this first mission the thirty-six mortars fired a prepared rolling barrage across the front of the two assault regiments. The barrage lines were spaced 100 yards apart and each mortar fired two rounds on each line. The infantry followed closely behind the barrage across the open fields and the hedgerows which characterized this terrain. When a round of WP fell, announcing that the barrage was moving forward to the next line, the infantry would spring forward and seek cover near the



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next line. Over 3,000 rounds of ammunition, mostly HE, were fired during this barrage, while the Vire River was crossed and the attack moved towards Ariel. Although some critics will say that this type barrage is wasteful of ammunition, the fact remains that the infantry gained its objective quickly and without many casualties.

During this first combat operation many situations developed which had been discussed during training but about which little had been done, primarily because of lack of time, but also because of inadequate training doctrine and combat-trained officers and enlisted men. Many perplexing problems arose, among which were: proper organization of position, local security, adequate communications between elements of the battalion and with the supported troops, and means of keeping the fragile mortars in action. Moreover, the mortar positions were just behind the infantry MLR, where enemy patrols were active, but the Battalion Table of Organization did not provide sufficient personnel to man our secondary weapons. The moving of thousands of 25 pound shells to within a few hundred yards of the enemy front lines was difficult to conceal. These are but a few of the problems that arose. With little exaggeration, however, it might be said that the personnel of the battalion learned more from this first combat mission of one week than they did from their three months of training.

Starting on 8 July the battalion was attached to the 29th Infantry Division to support its push south to St. Lo, the important communications center of this part of France. Making use of experience gained during the preceding week, mortar positions were selected and prepared in the daylight hours and were occupied at night. Mortars were emplaced on the surface of the ground and parapeted with sand bags. Ammunition and mortar crew pits were dug and camouflage nets were placed over the entire emplacements. These precautions were necessary because the enemy not only shelled all likely artillery positions during the day but at night sent over planes which dropped flares, followed by anti-personnel bombs when any activity or emplacements were observed.

One of the most difficult problems encountered by a mortar battalion commander, when the entire battalion was employed as a unit, was the choice of mortar positions. The commander of the supported infantry wanted the mortars to be as far forward as possible so that he could take full advantage of their limited range. He also wished to assign a very small area so that there would be a minimum of interference with his infantry installations, particularly with those of the 81-mm. mortars, and those of other attached troops. He generally did not realize that a battalion of mortars was comparable to nine batteries, or three battalions, of artillery and needed nearly as much position area.

During this period of attachment to the 29th Division the battalion had its first bitter taste of being overrun by the enemy. A strong patrol of the enemy broke through the supported infantry and reached the mortar battalion command post. Fortunately, the night was so dark that the enemy was as confused as the friendly troops and the casualties were few. However, everyone's blood pressure was rather high for a few hours.

One of the saddest experiences of the battalion throughout the entire war occurred a few days later while the battalion was supporting the 30th Division in its attack south towards Tessy-Sur-Vure. The capture of this town was the beginning of the Falaise pocket which cut off the Brest peninsula. On 24 July, two flights of P-47s dropped bombs in the battalion area but caused no casualties. On the 25th, during a mass attack by 3,000 friendly planes, prior to a large infantry attack, over 200 bombs fell in the battalion area. So many casualties were suffered by one company that it was unable to oper-

ate again until replacement personnel and equipment were received many days later. Lt. Gen. Douglas McNair, Commanding General, Army Ground Forces, who was visiting the front at the time of the attack, was killed within 100 yards of the battalion command post.

During August and until mid-September the battalion moved rapidly through France, Belgium and Holland. We crossed the Seine River about twenty miles northeast of Paris, on 31 August, just one week after the liberation of Paris. We spent three days at Evecquemont helping the townspeople celebrate both the liberation of Paris and the memory of French dead of the First World War. We formed a provisional trucking company which made a trip to Belgium to transport infantrymen in their pursuit of the fast-retreating Germans. Some of the more reckless officers and enlisted men violated orders and visited Paris, fraternized with the liberated Parisians, and forever bragged about it. *C'est la guerre!*

We entered Belgium on 8 September just north of Valenciennes, France and bivouaced at Momalle where we cleaned equipment and rehabilitated personnel. Again we formed a provisional trucking company, this time to haul gasoline and other supplies to some of the Corps units whose lines of communications were extended dangerously while their pursuit of the Germans continued. Here, a few reckless souls, including the battalion commander, broke all existing regulations and visited Brussels for a few hours. The temptation to visit some of these famous cities was just too great to resist, especially for one who never expected to have the opportunity again.

On 15 September a move was made to positions on the west bank of the Albert Canal, just opposite Maastricht, Holland, while the 30th Division was clearing the area around the famous fortress, Eben Email. Only one mission was fired and then the Canal and the Meuse River were crossed, after which the battalion moved into an assembly area at Mesch, Holland.

Throughout this period of over six weeks the Germans were retreating so rapidly that few fire missions were necessary. A few cities were "liberated" and some German soldiers, mostly stragglers, were captured. We encountered small groups of the enemy which had been bypassed by the rapidly advancing infantry but, except for a few shots from snipers, the marches were uneventful. Of course, it was frequently difficult to maintain march discipline because of the cheering Frenchmen, who desired to bestow all types of favors, including wine and kisses, on the American soldiers.

For two days after reaching Holland the battalion was attached to the 2nd Armored Division which advanced on and captured Sittard, Holland, and then turned towards the Siegfried line and Germany. This Division moved so rapidly against light enemy resistance that the battalion was unable to get into position and fire any missions. Many valuable lessons were learned during these two days, the most important being that an attached unit should not depend on an armored division for local security. Small pockets of enemy resistance were bypassed and the following troops had to do the cleaning up. This can prove embarrassing to a chemical mortar battalion, or any other similar unit.

On 19 September the battalion went into positions in the orchards of the town of Scherpenseel, Germany to support the 30th Division in its attack southeast through the Siegfried Line. From then until 2 October, when the big attack started, one platoon on the battalion's flank fired many probing missions. The firing was limited to this one platoon to prevent revealing the positions of the other mortars. The battalion area was very restricted and the positions were less than a thousand yards from the outer pill boxes of the enemy. Counterbattery fire fell

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on and near this platoon frequently but they were so well dug in that there were no casualties.

We made a number of attempts to burn hay stacks and buildings which were thought to conceal gun positions but WP shells proved unsatisfactory for this purpose. The lack of a good incendiary shell was a big disappointment to all the supported commanders. Frequently, however, a WP shell started a fire; usually when the fire was not wanted.

The first mission of the battalion during the attack of 2 October was to cut the barbed wire entanglements in front of the enemy defenses. Then a rolling barrage was fired in front of the advancing infantry, the rate of movement being controlled by forward observers with the attacking doughboys. Later, the battalion fired missions on the flanks of the infantry positions to deny enemy observation and stop counter attacks from these directions. For the next three weeks the battalion was frequently broken into companies, and even platoons, to support various attacking elements of the division. At the end of this operation part of the battalion was in or near Kerkrade, Holland and the remainder was near Wurselfen, Germany. Both cities were part of the gap which sealed off Aachen, Germany. During this operation we fired nearly 25,000 rounds and suffered 30 casualties.

The battalion received one of its many commendations from the CG, 30th Division after this operation. An even more appreciated "commendation" was from the battalion commander, 1st Bn., 117th Inf., who wrote in a XIX Corps publication, *Breaching The Siegfried Line* that he believed "that the most effective of any supporting fire came from the 4.2-inch chemical mortar barrage; it was this more than any of the other supporting fires which, laid 150 yards ahead of the assault companies, and also firing accurately into defiladed German positions, kept down enemy fire until B and C Companies stormed across the river." He was referring to the Wurm River which was in front of the fortified positions on the high ground along the far bank.

On 7 November the battalion, less one company which remained with the 30th Division, was attached to the 29th Division to support the drive to the Roer River. One of the mortar companies was attached to each of the assault regiments of the 29th. When the assault regiments were rotated the mortar companies continued with the new assault regiment, consequently little rest was possible.

Some of the toughest fighting of the war took place during this operation which carried the American forces to the west bank of the Roer. The mortar companies had difficulty supporting the infantry for a number of reasons. Little cover was available and the infantry commanders wanted the mortars in the front lines. Moves had to be made before enemy land mines were cleared. Besides, the mortars were expected to fire missions night and day for long periods of time. There were sufficient crewmen with artillery pieces to permit part of the gun squads to rest while others fired missions but this was not possible with the limited number of mortar crewmen, especially after frequent casualties had depleted the squads.

The battalion had a rather quiet time from early December, when the Roer was reached, until just before Christmas Day. The infantry was holding the west bank of the Roer, expecting orders to cross as soon as the waters subsided a bit. Although in firing positions and firing frequent missions during most of this period, the battalion was able to clean and repair equipment and to recover from the brutal treatment of the preceding month. Thirty-six casualties had been suffered. Two of the nine killed in action were platoon commanders. The

training of replacements always had to be done while in firing positions. Hence, we always welcomed periods when the firing was light or when few displacements of position were required.

The battalion had hoped to spend Christmas in its presently occupied positions. However, on 23 December, the battalion commander was reconnoitering for mortar positions in the Lammersdorf-Simmerath area, fifty miles to the south, where the 78th Infantry Division was holding the north flank of the bulge caused by Von Runstedt's break-through. The one company which had been with the 30th Division remained in the vicinity of Plummern and assisted the 102nd Infantry Division of the XIII Corps to hold the Roer River line while most of the other divisions moved south to the Bulge. These attachments continued until early February, except for a period of about one week, when the battalion, less one company, was sent about 75 miles north to join its third company which had remained with the 102nd Division. The purpose of this move was to join in a large scale attack that was being made in conjunction with the British on the left flank. This period of confusing attachments lasted until early February, just before the 78th Division reached the dams which controlled the flow of water northward on the Roer River.

The battalion was finally reunited and attached to the 29th Division to support the attack across the Roer, through Julich and onward to the Rhine River. This attack started on 22 February and ended when the 29th reached Muenchen-Gladbach at the Rhine on 1 March. Upon completion of this operation the battalion moved into an assembly area at Gusten and carried on a program of rehabilitation of men and equipment, and training for nearly two weeks. On 13 March the battalion was released from the XIX Corps and attached to the XVI Corps. After a move to a new assembly area in Karken, near the border of Holland we made preparations for the impending crossing of the Rhine River.

The plans for the Rhine crossing placed the battalion in support of the 30th Division. On the night of 20 March we moved into positions near the town of Wallach, a few miles south of Wesel. The 30th and 79th Divisions, under XVI Corps, were to make the main effort of the Ninth Army, after a complicated scheme of deception had deceived the enemy as to the plans for "Operation Flashpoint." The attack was to be made in conjunction with that of the British, on the north flank, with all allied forces under the overall direction of the 21st Army Group. It was hoped that this attack across the Rhine and along the northern edge of the Ruhr industrial area would lead to the final defeat of the Wehrmacht.

Tremendous fire power was concentrated in the zone of the 30th Division to support the crossing, the largest amphibious operation on the continent. Twelve battalions of artillery and one mortar battalion were to fire along the division front. The fires of the 92nd Chemical Mortar Battalion were divided into three phases. Phase one called for 40 minutes of neutralizing fire on the dikes along the east bank of the river. In phase two the battalion was to place 20 minutes of concentrated fire at the maximum rate on the points where the troops were to land and where the bridges were to be built. The attack would then jump off and for 270 minutes (phase three) the 4.2-inch mortars were to fire on several small towns which appeared to be enemy strongholds. The attack started at 0100 and by daylight the far shore was well in hand. After the attack started the battalion moved to positions a few miles north of the original positions, to help neutralize strong resistance which had developed on the buderichen Dike area of Lip-Perdorp.

The battalion did not cross the Rhine until the day

after the attack. Then followed several days of marching, with some missions, but mostly just following the 30th Division which was mopping up behind the fast moving 2nd Armored Division. The battalion covered considerably over 100 miles in moving, first to Drensteinfurt, then Neunkirchen, Augustdorf, Heddissen, Ostinghausen and Natelin in succession. While the Ninth Army was moving eastward north of the Ruhr, the First Army was advancing on a parallel line south of the Ruhr. When the two armies met in the vicinity of Lippstadt the Ruhr pocket was formed. The battalion was attached to three different divisions during the next eight days and assisted in the reduction of the pocket.

On 13 April the battalion left the Ruhr area and again started on its way to the east, travelling over roads crowded with heavy traffic, in great part the hordes of liberated slave laborers. Upon reaching Seehausen, near the Elbe, we learned that the battalion was attached to the 83rd Infantry Division which had established a bridgehead opposite Barby, just south of Magdeburg. The 2nd Armored and the 83rd Infantry Divisions had reached the Elbe at approximately the same time and had started bridging operations. After that of the 2nd Armored had come under heavy fire the operation was concentrated farther south in the 83rd Division area.

The bridgehead was quite small and only one bridge spanned the Elbe. The battalion moved cautiously across the bridge and into positions a few miles east of the river. As the mortar companies moved into positions German soldiers frequently came out of the woods and buildings and surrendered. The Germans shelled the positions frequently with self-propelled guns, firing at short range, but the German soldiers had lost most of their will to fight. Shellings, some enemy bombings of the bridge at night and half-hearted counterattacks were frequent at first but little damage was suffered.

On 28 April the Division moved forward and captured the town of Zerbst against light opposition. During the same day, however, the division was ordered to withdraw because someone had discovered that the town was in Russian territory. Realizing that the Russians were advancing from the east, the Germans began moving towards the American lines and surrendering by the thousands. The battalion marked time in firing positions until 6 May when it withdrew to a sector in Kreis Holzminden and assumed occupational duties. The collapse of the German Army was so complete and so widespread that the formal surrender on 8 May seemed anti-climatic.

On 26 May the battalion moved to a location just east of Frankfurt and resumed occupational duties similar to those in the preceding location. In addition to caring for the displaced persons' camps and PW camps, we cleaned equipment and carried on training. Some passes were granted. The Red Cross Clubmobiles paid us a few visits and provided some entertainment. This was indeed welcome for, throughout the war entertainment had never found its way to the small attached units although it had been available to the divisions and the higher headquarters. An occasional borrowed movie and projection equipment was the extent of the entertainment that was available to an "orphan" unit, like the 92nd.

About this time dame rumor stated that the battalion was to be redeployed to the South Pacific. Most of the men accepted this as inevitable, but were hoping that the move would be made through the United States. On 12 June the good news arrived that the battalion was to move to the Pacific via the United States. There was much work to be done. Records and property had to be prepared for the visits of the Inspector General's teams. Some equipment was turned in and other was drawn in its place. Many received new clothing. The battalion lost one hundred thirty men who had over 84 points and were, there-

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fore eligible for eventual return to the United States and discharge.

On 20 June the battalion moved 225 miles to Nancy, France; on the next day 160 miles more to Camp Chicago, near Rheims. Here, the battalion had a delightful stay and many received passes to visit Rheims. Every man was permitted to see Paris, 100 miles away, at least once. An advance party left for the United States on 12 July; the battalion moved by train to Camp Top Hat, just a few miles from Antwerp, Belgium. After a stay of one week here, during which men and equipment were prepared for shipment, we boarded the Liberty Ship, *John Sergeant*, and began the homeward trip to the United States. Although the trip required twelve days, it was a pleasant voyage. The most joyous moment was when the coastline of Virginia finally appeared in the distance.

With uneasy eyes focused on the Far East, the members of the battalion departed from Camp Patrick Henry, Virginia for 30 days rest at their chosen destinations. The days at home went far too rapidly, but the final surrender of Japan raised hope in everyone that the battalion might not have to go to the Far East. Shortly after the battalion reassembled at Camp San Luis Obispo, California, the Army's discharge program under the point system began to gather momentum. Small groups of officers and enlisted men began leaving for separation centers until so few remained that they were organized into a headquarters company.

Finally, on 27 October 1945 the battalion received inactivation orders. The battalion that had been formed so hurriedly in England only 20 months previously, had fought through France, Belgium, Holland and Germany and received credit for six campaigns, had over 150 battle casualties, of whom seven officers and 35 enlisted men were killed in action, and had received at least 125 combat decorations, ceased to exist except in the memories of the men who had served with it.

MINE SWEEPERS GO IN FIRST

(Continued from Page 23)

North Korean mountains and a serious lack of supplies reaching the front because of badly mauled roads and railways. It became an urgent requirement to open the west coast port of Chinnampo to UN supply shipping. This port, forty miles from the North Korean's captured capital, connecting by rail and hiway, is situated seventy miles upriver from the open sea lanes and access was blocked by well-conceived minelaying.

The mine force which was hurriedly formed for this task consisted of 3 AMS's, 2 DMS's, small boat sweepers, an underwater demolition team, helicopter unit, assistance from Navy patrol plane search flights and necessary support ships. Detouring minelines in some of the delta-formed channels, the force accounted for more than two hundred mines and opened channels totaling more than one hundred and sixty miles in little over three weeks.

By November 10th, an LST had docked at Chinnampo and was unloading tanks for the Eighth Army. Ten days later the USS REPOSE, a deep draft Navy hospital ship was anchored off the port and taking on Army casualties from the front.

The Chinnampo operation began with clearance of a sea approach area by the two DMS's, followed by the AMS's formation sweeps into the islanded delta area and the destruction of minelines blocking the channels by patrol plane, underwater demolition men and small shallow boat sweepers. Overhead a helicopter spotted mines, taking advantage of the range in extreme tides of the area. Weather, in addition to the usual hazards of sweeping mines, made work impossible during five days of the first fifteen.

The use at Chinnampo of full-time helicopter mine search and patrol plane air coverage of the area was an innovation that speeded up the task. No matter how many mines a plane can spot and sink, however, no responsible commander will risk ships in waters suspected of containing even one mine, until the slow, clumsy minesweepers have dragged their gear through the paths they will take.

In the age of jet aircraft, rockets, atomic artillery and bombs, minesweeping equipment and techniques change slowly. So far there is no substitute for the slow-speed ships that go in first, the heavy tackle and cumbersome gear they rig, or the prime urgency of sweeping the unseeable explosives before ships can navigate enemy waters.

The war in Korea may have been stopped by the time this reaches print. While life will then be easier for the crews of the minesweepers, their tasks will not be finished. With help from units of the Republic of Korea, whose men are being trained in minesweeping work, mines will continue to be swept. South Korean ports must be cleared and kept open for the thousands of tons of shipping that will go into the stricken country to maintain United Nations' commitments. And other minesweepers and crews will sail from west coast shipyards and the reserve fleets to relieve the ships now operating in the western Pacific.

It has been claimed that the greatest lesson the Navy learned in Korea has been the need to revitalize and re-emphasize its minewarfare components. The Navy remembers that the present enemy and any future enemy can and will make increasingly effective use of mines; that mine warfare development and research have long been stressed by this potential enemy and that he captured the world's most advanced mine technicians and mine mechanisms at the end of World War II. These factors present a new challenge which the Navy accepted in Korea and which will account for large-scale mine warfare efforts in the future.

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CIVIL DEFENSE IN MODERN WAR. A Text on the Protection of the Civil Population against A-B-C Warfare (Atomic, Bacterial, Chemical) By Augustin M. Prentiss, Ph.D., Brigadier General, United States Army (Retired With a Chapter on "Air Power Today" by Augustin M. Prentiss, Jr., Colonel, United States Air Force. McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York 18, New York. 427 pages, \$6.00.

This book, presented to afford the public a better understanding of the problems of civil defense, is an encyclopedia of information. It is based upon the various "unclassified" official publications, as well as the author's extensive experience. It is well illustrated and includes an extensive bibliography of both American and foreign publications, articles and books. It is unusually well indexed and is presented in three parts.

Part I, Modern Air Warfare, is concerned with the scope and characters of modern air warfare, including newest types of aircraft such as pilotless bombers and guided missiles. It is concerned with both active military air defense and passive defense based on the assumption that no amount of military air defense can prevent a determined enemy from delivering a devastating attack against our cities and industries.

Part II, Civil Air Defense, discusses the problems of defense against modern air attack in both its active and passive aspects. The effects of attack with high-explosive, incendiary, chemical, bacterial and atomic bombs are discussed in detail together with the type of protection. The discussion of the tactical use of these weapons makes this book of great value to military students and is indicative of the basic treatment by the author of each phase of civil defense.

Part III, Organization for Civil Defense, is concerned with civil defense organization on National, State and local levels. After discussion of the responsibilities of each echelon of government in providing the necessary organization for defense, there is a detailed discussion of the scope and character of the services and facilities essential to staff this organization. It is pointed out that it is estimated that some fifteen million people will be involved in operating such a program in full-scale war. The assembling and training of such an organization cannot be accomplished in a few weeks. It is essential that such a task must be pushed now, not only by our govern-

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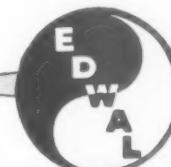
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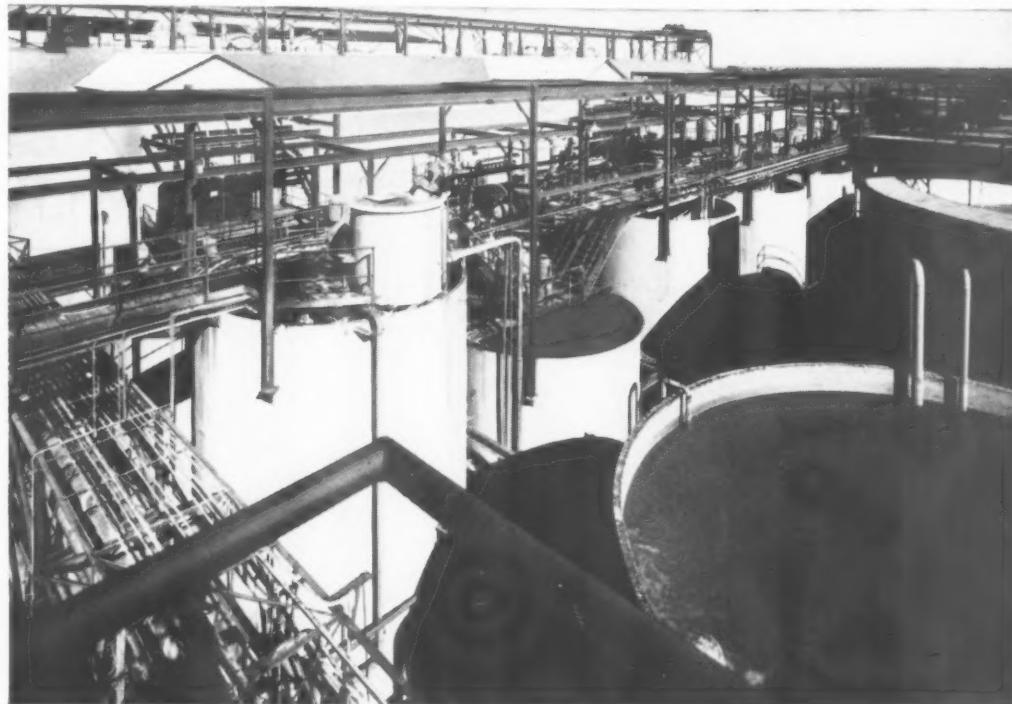
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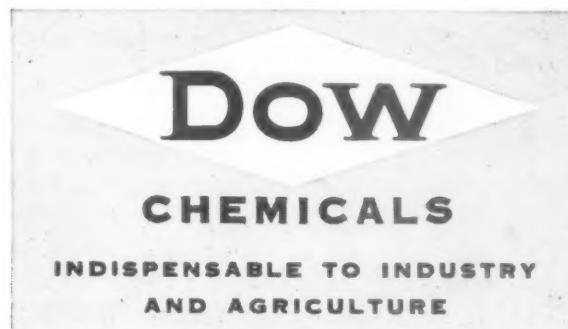
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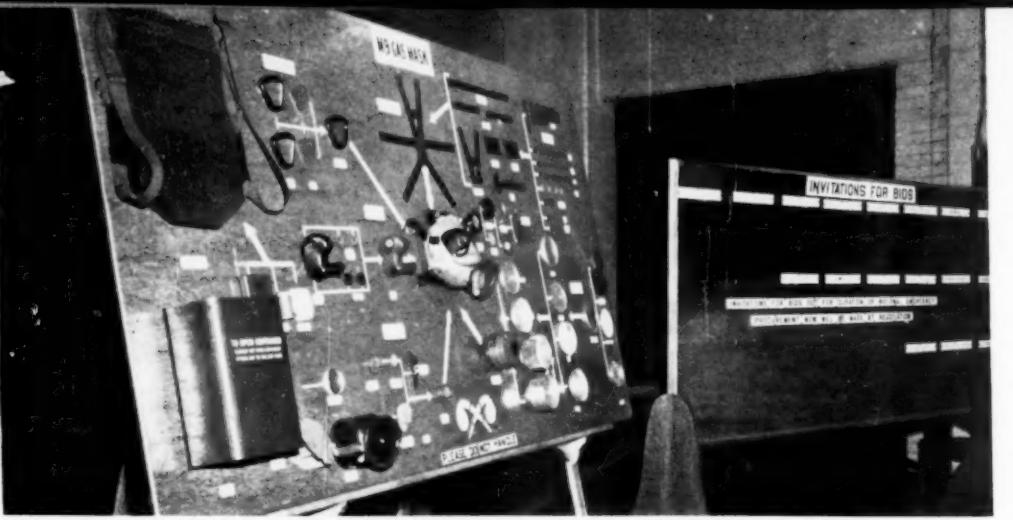
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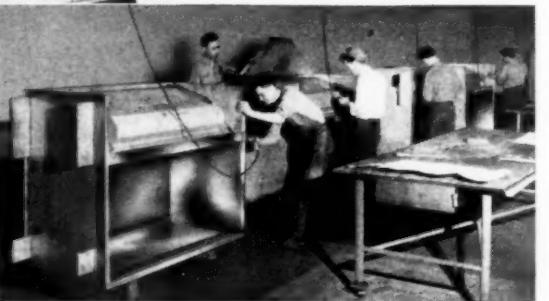




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TEAMWORK IN NEW ENGLAND

(Continued from Page 54)

ple, while \$7,054,692.06 was given to small business concerns. From the time when the first contract was awarded in October of 1950 until June 1951, there have been some \$40,000,000 worth of contracts awarded by this District.

Industrial Coordination

Through the cooperation of radio stations and newspapers, as well as through speaking engagements throughout New England, and conferences between members of industry and the procurement district, there has been disseminated information relative to the ways in which industry can cooperate with the Chemical Corps in the defense effort. These media have met great success in providing information to industry, relative to materials required for procurement and procedures in obtaining government contracts. Colonel Sullivan and his staff feel very strongly about meeting personally with men of industry, to keep them informed of the part they can play in the current procurement program. As a result, Colonel Sullivan has made it a point to speak to small groups of industrialists, in all parts of New England, and discuss informally with them problems involved in government procurement. The efforts of the District, in this respect, have been bolstered by a coordination of efforts of the Armed Forces Regional Procurement Council, (a body composed of the commanding officers of the procurement agencies of the Army, Air Force and Navy in the New England Area.)

Unification has become more than a word in the Boston area, as this District is self-contained in its actions on procurement, plant inspection, plant availability and many other matters concerning all services. For example: A clearance given a plant by an inspection team of Navy Procurement will also apply as a clearance for Army and Air Force Procurement. The Procurement Council here in Boston, in all its activities, avoids duplicating in all phases of procurement, saving time and energy in such activities as security checks, plant inspections, procurement planning and other phases of the District's responsibilities.

Recently, the Procurement Panel of the Council conducted a most successful Armed Services Clinic at Commonwealth Armory in Boston. On this occasion, prime contractors of the various Armed Services Procurement Agencies, including those of the Boston Chemical Procurement District, exhibited items for which these prime contractors needed sub-contractors, there-

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BOOK REVIEWS

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mental organizations but by every citizen. It is estimated that fifty percent of the lives that might otherwise be lost in a bombing raid can be saved by foresight and planning. This serves to illustrate the necessity of individual participation in the program. The lives of the individual and his family will depend upon it.

Books Received For Review

"Physical Biochemistry." Henry B. Bull. 32nd ed. 355 pp. John Wiley & Sons, Inc., New York, N. Y. \$5.75.

"Organic Reactions." Volume VI. Edited by Roger Adams. 517 pp. John Wiley & Sons, Inc., New York, N. Y. \$8.00.

"Insect Control by Chemicals." A. W. A. Brown. 817 pp. John Wiley & Sons, Inc., New York, N. Y. \$12.50.

"An Introduction to the Chemistry of the Silicones." Eugene G. Rochow.

TEAMWORK IN NEW ENGLAND

(Continued from Page 50)

by providing an opportunity for small business to see, as well as discuss, their potential ability to manufacture these items. The small businessman is provided further opportunities for receiving information on both current procurement and procurement planning, through conferences with members of the Boston District. As a result of this excellent coordination between the Armed Services in the Boston Area, the procurement policy finds itself resolved to the benefit of all concerned—both to industry and the military.

Training of Reserve Officers

The Boston Chemical Procurement District has not lost sight of the fact that an efficient pool of Reserve Officers, ready to step into the District on M-Day, is a most vital asset to the organization's complete efficiency. One of the major activities of the Boston Chemical Procurement District's Reserve complement of officers, (the 4th Mobilization Detachment) over the past year was a procurement problem drawn up by the Boston District and used as a training exercise by the reserve unit over the training period for 1950-51. Over and above this, Colonel Sullivan has encouraged reservists to enter active duty training with the District and has evidenced unusually fine response in both numbers and quality of officers assigned to the Reserve unit.

During this past summer, all members of the reserve unit, commanded by Colonel Arthur G. Rogers, of

2nd ed. 213 pp. John Wiley & Sons, Inc., New York, N. Y. \$5.00.

"Radioactivity Applied to Chemistry." Edited by Arthur C. Wahl and Norman A. Bonner. 604 pp. John Wiley & Sons, Inc., New York, N. Y. \$7.50.

"Radiation Monitoring in Atomic Defense." Dwight E. Gray and John H. Martens. 122 pp. D. Van Nostrand Company, Inc., New York, N. Y. \$2.00.

"Industrial Water Pollution. Survey of Legislation and Regulations." Marvin D. Weiss of R. S. Aries & Associates. 142 pp. Chemonomics, Inc., New York, N. Y. \$5.00.

"The Serviceman and the Law." Morris O. Edwards and Charles L. Decker. 6th ed. 401 pp. The Military Service Publishing Co., Harrisburg, Pa.

"Index-Digest to the Uniform Code of Military Justice." Lee S. Tillotson. 162 pp. The Military Service Publishing Co., Harrisburg, Pa. \$2.50.

"Kill or Get Killed." Rex Applegate. 316 pp. The Military Service Publishing Co., Harrisburg, Pa. \$3.75.

Marblehead, Mass., have undergone a 15-day period of summer field training at the Boston Chemical Procurement District, with an opportunity to work on their individual reserve assignments in practical problems.

BCPD Proud of Its Accomplishments

The Boston Chemical Procurement District has been commended many times for its operation since its recent reactivation. Much of the credit for this fine work has been due to the fine corps of civilians working in the Boston Chemical Procurement District. A fine contribution has been made by the four WAC officers assigned to the District. The Boston Chemical Procurement District is the first and, at present, the only chemical procurement district using WACs.

The District is justly proud of the fact that on two of its major procurement items, final cost has been lowered measurably. On the gas mask, in spite of higher rubber prices, purchase is now being made for much less than the cost before Korea. The other item, the canister, is being purchased at less than 70% of pre-Korean prices. Considering the general upward rise in prices, such cost reductions make the above truly an accomplishment worthy of note.

All in all, the Boston Chemical Procurement District has aided greatly the Chemical Corps and the Department of the Army in carrying out the assigned mobilization planning and current procurement programs, and is continuously striving to better its past achievements.

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NEW YORK CHAPTER PLAYS HOST

(Continued from Page 3)

amid, Allied Chemicals, Merck, Monsanto, and many others here, and not here. I do want to say how grateful we visitors are to your country."

General Bullene then delivered an address dealing with the current reorganization going on in the Chemical Corps. He made announcements in the course of this talk which are of such outstanding importance that his address is published in full in this issue and will therefore not be briefed here.

General Porter then introduced Mr. James Davidson Pratt, and referred with pleasure to the many contacts that they have had going back to the period immediately after World War I. Mr. Pratt, who is Director and Secretary of the Association of British Chemical Manufacturers, referred to the many friends and valuable associations he had formed in a series of liaison visits to this country. "That

RECENT LITERATURE

(Continued from Page 25)

protection; hazards to industry; internal security, minimizing effects of enemy attack; and planning for plant protection.

Abstracted in *Technical Data Digest* (1951), published by Central Air Documents Office, (Army-Navy-Air Force), Dayton 2, Ohio.

THE EXTENSIVE UTILIZATION OF RUBBER AND PLASTIC ELASTOMERS IN THE U.S. NAVY, T. A. WERKENTHIN; *RUBBER AGE* Jan '51, (68-4 Mthly); pp. 435-442; 12 illus.

Rubber and plastic elastomers are used extensively in all of the Navy's fighting ships. A carrier of the Midway class, for example, uses more than 60,000 lbs. of rubber. Uses of rubber aboard ship fall into four major categories. These include: underwater coatings and protective coverings; (2) use of rubber in machinery and as component parts; (3) use in auxiliary ship equipment; and (4) miscellaneous other uses. The third category includes such items as grommets and sheaths for aerials, radio, radar, signal lights, matting for vibration absorption, vulcanized rubber linings which are permanently adhered to decks, etc. Hoses of various types, linings in submarines' battery compartments, rubber uses in clutches and brakes, and rubber use in safety and fire-fighting equipment make up the bulk of the miscellaneous category.

GERMAN AND AMERICAN STAINLESS COMPARED, C. A. Zapffe; *IRON AGE* 25 JAN '51 (161-4 Wkly); pp. 56-60; 4 tb.

Currently used compositions of wrought stainless steels have recently been standardized in Germany in a manner similar to the AISI classification in the United States. A comparison of the standard German and American listings is made. Restricting attention to the wrought stainless steels, Tables I, II, and III present a compilation of the standard analyses compiled in Germany and America in 1949. The tables are constructed with a view to matching similar grades. This is not always easy to do, and some of the groupings are entirely arbitrary. It is also important to note that a number of grades on the AISI list come under separate specifications in Germany on the basis of heat-resisting alloys, electrical resistors, and special steels. Gaps in the tables therefore do not necessarily mean that a grade of a corresponding analysis is not made in Germany. Because of shortages of nickel in Germany, particularly acute during World War II, manganese and nitrogen were substituted as austenitizing elements in the Class III (austenitic) grades. Some of the alloys are listed in Table IV. Results of the substitution were interesting; but these ersatz ele-

was," he said, "the beginning of a liaison and a cooperation which I think has proved of the very greatest value to our two countries. . . . In Great Britain the efficacy and closeness of our (chemical) liaison was admired by all the other branches, and many of them, I am glad to say, are now trying to emulate it.

"We were very fortunate in this war that we won our chemical war without having to fight it, because of the preparedness we had made both defensively and offensively. But it is necessary that that liaison contact should be maintained, and may I say this: that the contacts must not only be at the top levels, but they must also go down—and I hope the General will not misunderstand me—to the working levels, so that the people who do the same jobs whom one never hears about very much in the two countries may meet together periodically and may exchange jobs so as to know each other intimately."

President Lawson declared the meeting adjourned at 11:45 p.m.

ments never did fully replace nickel, and they have been largely abandoned since the war. Table III lists only the standard German grade containing special additions of manganese; none contain nitrogen.

CAN INDUSTRY PARRY THE A-BOMB, R. Hawthorne; *AVIATION AGE* Jan '51 (15-1 Mthly); pp. 17-19; illus.

Some of the steps industry can take to protect itself from the atomic bomb are outlined. Both industry and responsible government agencies are almost wholly unprepared with emergency measures to maintain production in the event this country is bombed. That something can be done was proved by the Strategic Bombing Survey after World War II. German as well as Japanese industry survived devastating bombing raids. Dispersion of industrial plants to a short distance away from a city is one way of combating the menace. In addition, shelters to protect personnel can be built. In setting up an emergency preparedness program, S. C. Rothmann, Director, Loss Prevention Engineering Department, American Cyanamid Co., Linden, N.J., suggests the following steps: (1) Form a planning organization (size and composition depending on plant size, location, products made, etc.). (2) Organize a logical indoctrination program starting with top management and down the line until every employee is reached. (3) Make an over-all plant survey of your hazard problems from standpoint of fire, blast, toxic, and corrosive materials handled. (4) Simultaneously, take an inventory of all protective, preventive, or precautionary equipment required. (5) Review and bring up to date all regulations pertaining to prevention of loss of life, limb, or property. (6) Divide your plant into evacuation areas. Also, evaluate and designate plant buildings which might be adapted to or converted into shelters; check availability and adequacy of fire prevention and fighting facilities, first aid, demolition, etc. (7) Enlist cooperation of neighbor plants, civil defense, municipal officials, etc.; find out what they are doing and have available for an emergency; let them know what you are doing and have available.

JAPANESE SCIENCE AND TECHNOLOGY, H. C. Kelly; *RESEARCH REVIEWS (ONR)* Jan '51 (Mthly); pp. 7-11.

Tehnologically, Japan is about 15 years behind Britain and the U. S., but in the fundamental sciences, Japan has learned to appreciate research and contribute to the advancement of knowledge. Since the war, that country's national scientific bodies have been reorganized. The article described the organization of the Japan Science Council, the Japan Academy of Science, and the Scientific and Technical Commission, all of which came into being in January 1949.

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